U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
PB80-119340

Field Tests of Industrial Stoker Coal-Fired Boilers for Emissions Control and Efficiency Improvement - Site C (Data Supplement)

KVB, Inc., Minneapolis, MN

Prepared for

Industrial Environmental Research Lab., Research Triangle Park, NC

Jul 79

ABMA American Boiler Manufacturers Association, 1500 Wilson Boulevard, Arlington VA 22209

DoE United States Department of Energy, Division of Power Systems, Energy Technology Branch, Washington DC 20545

EPA US Environmental Protection Agency, Office of Research and Development, Industrial Environmental Research Laboratory, Research Triangle Park NC 27711

PB 80-119340

EPA-600/7-79-130b
July 1979

Field Tests of Industrial Stoker Coal-fired Boilers for Emissions Control and Efficiency Improvement - Site C (Data Supplement)

Interagency Energy/Environment R&D Program Report

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

RESEARCH REPORTING SERIES

Research reports of the Office of Research and Development, U.S. Environmental Protection Agency, have been grouped into nine series. These nine broad categories were established to facilitate further development and application of environmental technology. Elimination of traditional grouping was consciously planned to foster technology transfer and a maximum interface in related fields. The nine series are:

1. Environmental Health Effects Research
2. Environmental Protection Technology
3. Ecological Research
4. Environmental Monitoring
5. Socioeconomic Environmental Studies
6. Scientific and Technical Assessment Reports (STAR)
7. Interagency Energy-Environment Research and Development
8. "Special" Reports
9. Miscellaneous Reports

This report has been assigned to the INTERAGENCY ENERGY-ENVIRONMENT RESEARCH AND DEVELOPMENT series. Reports in this series result from the effort funded under the 17-agency Federal Energy/Environment Research and Development Program. These studies relate to EPA's mission to protect the public health and welfare from adverse effects of pollutants associated with energy systems. The goal of the Program is to assure the rapid development of domestic energy supplies in an environmentally-compatible manner by providing the necessary environmental data and control technology. Investigations include analyses of the transport of energy-related pollutants and their health and ecological effects; assessments of, and development of, control technologies for energy systems; and integrated assessments of a wide range of energy-related environmental issues.

EPA REVIEW NOTICE

This report has been reviewed by the participating Federal Agencies, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/7-79-130b	2.	3. RECIPIENT'S ACCESSION NO. PB 80 119340
4. TITLE AND SUBTITLE Field Tests of Industrial Stoker Coal-fired Boilers for Emissions Control and Efficiency Improvement--Site C (Data Supplement)		5. REPORT DATE July 1979
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) J.O. Burlingame, R.A. Parker, J. Cook, W.M. Jackson, and J.D. Demont		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS KVB, Inc. 6176 Olson Memorial Highway Minneapolis, Minnesota 55422		10. PROGRAM ELEMENT NO. EHE624
		11. CONTRACT/GRANT NO. EPA-IAG-D7-E681 and DOE-EF-77-C-01-2609
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development* Industrial Environmental Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Supplement; 4/78 - 7/78
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES (*) Cosponsors are DOE and the American Boiler Manufacturers Assoc. Project officers are R.E. Hall (EPA) and W.T. Harvey, Jr. (DOE). The final technical report is EPA-600/7-79-130a.

16. ABSTRACT The Data Supplement is a compilation of test data presented in greater detail than was practical in the final technical report. It is intended to provide the necessary details to other researchers who are interested in performing their own analysis. Readers are referred to the contract final report for information as to objectives, description of facility tested and coals fired, test equipment and procedures, interpretations, and conclusions. The final technical report also contains data summaries not found in this supplement. The Supplement contains panel board data for each test, detailed particulate, O_2, CO_2, CO, NO, SO_2, and SO_3 data, particle size distribution data, modified smoke spot data, chemical analysis of the coal, and coal size consistency data.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group	
Air Pollution	Improvement	Air Pollution Control	13B	
Boilers	Efficiency	Stationary Sources	13A	
Combustion	Flue Gases	Combustion Modification	21B	
Coal	Fly Ash	Spreader Stokers	21D	
Field Tests	Particle Size	Particulate	14B	
Dust	Nitrogen Oxides	Overfire Air	11G	07B
Stokers	Sulfur Oxides	Flyash Reinjection		

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES 443
	20. SECURITY CLASS (This page) Unclassified	22. PRICE A19-A01

EPA Form 2220-1 (9-73)

EPA-600/7-79-130b

July 1979

Field Tests of Industrial Stoker Coal-fired Boilers for Emissions Control and Efficiency Improvement - Site C (Data Supplement)

by

J. O. Burlingame, R. A. Parker, J. Cook,
W. M. Jackson, and J. D. Demont

KVB, Inc.
6176 Olson Memorial Highway
Minneapolis, Minnesota 55422

IAG/Contract Nos. IAG-D7-E681 (EPA), EF-77-C-01-2609 (DoE)
Program Element No. EHE624

Project Officers: Robert E. Hall (EPA) and William T. Harvey, Jr. (DoE)

Industrial Environmental Research Laboratory
Office of Energy, Minerals, and Industry
Research Triangle Park, NC 27711

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Research and Development
Washington, DC 20460

U.S. DEPARTMENT OF ENERGY
Division of Power Systems/Energy Technology Branch
Washington, DC 20545

and

AMERICAN BOILER MANUFACTURERS ASSOCIATION
1500 Wilson Boulevard
Arlington, VA 22209

i.a

ABSTRACT

The Data Supplement is a compilation of test data presented in greater detail than was practical in the Final Technical Report. It is intended to provide the necessary details to other researchers who are interested in performing their own analysis. Readers are referred to the contract final report for information as to objectives, description of facility tested and coals fired, test equipment and procedures, interpretations and conclusions. The Final Technical Report also contains data summaries not found in this volume. The Supplement contains panel board data for each test, detailed particulate, O_2, CO_2, NO, SO_2 and SO_3 data, overfire air velocity traverse data, flyash reinjection mass flow rate data, particle size distribution data, modified smoke spot data, chemical analysis of the coal and coal size consistency data.

TABLE OF CONTENTS

Section		Page
	FOREWORD	iv
	CONVERSION FACTORS	v
1.0	PANEL BOARD DATA	1
	1.1 Control Room Data	2
2.0	PARTICULATE DATA	135
	2.1 Particulate Data Summary	136
	2.2 Particulate Data	142
	2.3 Particulate Lab Worksheets	190
3.0	GASEOUS DATA	237
	3.1 Gaseous Emission Summary	238
	3.2 Gaseous Emission Data	243
	3.3 SOx Data Summary	288
	3.4 SOx Data Sheets	289
4.0	SPECIAL TESTS DATA	293
	4.1 Overfire Air Duct Dimensions & Sample Geometry	294
	4.2 Overfire Air Duct Velocity Traverses	296
	4.3 Flyash Reinjection Mass Flow Rates	333
	4.4 Modified Smoke Spot Data Sheet	335
	4.5 Particle Size Distribution - Brink	337
	- SASS	343
	- Bahco	344
5.0	FUEL AND ASH ANALYSIS	351
	5.1 Commercial Testing & Engineering Co. Analysis	352
	5.2 Combustibles Data Sheet	391
	5.3 Sieve Analysis Test Report	396

FOREWORD

The purpose of this Data Supplement Volume is to document data in greater detail than was practical in the Final Technical Report.[1] It is intended to provide the necessary details to other researchers who are interested in performing their own analysis. Readers are referred to the contract final report for information as to objectives, description of facility tested and coals fired, test equipment and procedures, interpretations and conclusions. The Final Technical Report also contains data summaries not found in this volume.

The data in this volume are arranged by type (i.e., Panel Board Data, Particulate Data, etc.) and within each type by test number. Data summaries where they exist are at the front of each section. The boiler tested is referred to as Boiler C; as it is the third boiler tested under the program entitled, "A Testing Program to Update Equipment Specifications and Design Criteria for Stoker Fired Boilers."

---

[1] Gabrielson, J. E., et al., "Field Tests of Industrial Stoker Coal-Fired Boilers for Emissions Control and Efficiency Improvement - Site C", EPA-600/7-79-130a, May 1979.

CONVERSION FACTORS

ENGLISH AND METRIC UNITS TO SI UNITS

To Convert From	To	Multiply By
in	cm	2.540
in^2	cm^2	6.452
ft	m	0.3048
ft^2	m^2	0.09290
ft^3	m^3	0.02832
lb	Kg	0.4536
lb/hr	Mg/s	0.1260
$lb/10^6$BTU	ng/J	430
9/Mcal	ng/J	239
BTU	J	1054
BTU/lb	J/kg	0.002324
BTU/hr	W	0.2929
J/sec	W	1.000
J/hr	W	3600
BTU/ft/hr	W/m	0.9609
BTU/ft/hr	J/hr/m	3459
$BTU/ft^2/hr$	W/m^2	3.152
$BTU/ft^2/hr$	$J/hr/m^2$	11349
$BTU/ft^3/hr$	W/m^3	10.34
$BTU/ft^3/hr$	$J/hr/m^3$	37234
psia	Pa	6895
$"H_2O$	Pa	249.1
Rankine	Celsius	C = 5/9R-273
Fahrenheit	Celsius	C = 5/9(F-32)
Celsius	Kelvin	K = C+273
Rankine	Kelvin	K = 5/9R
COAL FUEL ONLY		
ppm @ 3% O_2 (SO_2)	ng/J	0.851
ppm @ 3% O_2 (SO_3)	ng/J	1.063
ppm @ 3% O_2 (NO)	ng/J	0.399
ppm @ 3% O_2 (NO_2)	ng/J	0.611
ppm @ 3% O_2 (CO)	ng/J	0.372
ppm @ 3% O_2 (CH_4)	ng/J	0.213

CONVERSION FACTORS

SI UNITS TO ENGLISH AND METRIC UNITS

To Convert From	To	Multiply By
cm	in	0.3937
cm^2	in^2	0.1550
m	ft	3.281
m^2	ft^2	10.764
m^3	ft^3	35.315
Kg	lb	2.205
Mg/s	lb/hr	7.937
ng/J	$lb/10^6 BTU$	0.00233
ng/J	g/Mcal	0.00418
J	BTU	0.000948
J/kg	BTU/lb	4.303
J/hr/m	BTU/ft/hr	0.000289
$J/hr/m^2$	$BTU/ft^2/hr$	0.0000881
$J/hr/m^3$	$BTU/ft^3/hr$	0.0000269
W	BTU/hr	3.414
W	J/hr	0.000278
W/m	BTU/ft/hr	1.041
W/m^2	$BTU/ft^2/hr$	0.317
W/m^3	$BTU/ft^3/hr$	0.0967
Pa	psia	0.000145
Pa	$"H_2O$	0.004014
Kelvin	Fahrenheit	F = 1.8K-460
Celsius	Fahrenheit	F = 1.8C+32
Fahrenheit	Rankine	R = F+460
Kelvin	Rankine	R = 1.8K

COAL FUEL ONLY

ng/J	ppm @ 3% O_2 (SO_2)	1.18
ng/J	ppm @ 3% O_2 (SO_3)	0.941
ng/J	ppm @ 3% O_2 (NO)	2.51
ng/J	ppm @ 3% O_2 (NO_2)	1.64
ng/J	ppm @ 3% O_2 (CO)	2.69
ng/J	ppm @ 3% O_2 (CH_4)	4.69

SI PREFIXES

Multiplication Factor	Prefix	SI Symbol
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{2}	hecto*	h
10^{1}	deka*	da
10^{-1}	deci*	d
10^{-2}	centi*	c
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p
10^{-15}	femto	f
10^{-18}	atto	a

*Not recommended but occasionally used

EMISSION UNITS CONVERSION FACTORS
FOR TYPICAL COAL FUEL (HV = 13,320 BTU/LB)

To Obtain \ Multiply By		% Weight in Fuel		lbs/10^6Btu		grams/10^6Cal		PPM (Dry @ 3% O_2)		Grains/SCF. (Dry @ 12% CO_2)	
		S	N	SO_2	NO_2	SO_2	NO_2	SOx	NOx	SO_2	NO_2
% Weight In Fuel	S	1		0.666		0.370		13.2×10^{-4}		1.48	
	N				0.405		0.225		5.76×10^{-4}		.903
lbs/10^6Btu	SO_2	1.50		1		(.556)		19.8×10^{-4}		(2.23)	
	NO_2		2.47				(.556)		14.2×10^{-4}		(2.23)
grams/10^6Cal	SO_2	2.70		(1.8)		1		35.6×10^{-4}		(4.01)	
	NO_2		4.44		(1.8)				25.6×10^{-4}		(4.01)
PPM (Dry @ 3% O_2)	SOx	758		505		281		1		1127	
	NOx		1736		704		391				1566
Grains/SCF (Dry @ 12% CO_2)	SO_2	.676		(.448)		(.249)		8.87×10^{-4}		1	
	NO_2		1.11		(.448)		(.249)		6.39×10^{-4}		

NOTE: 1. Values in parenthesis can be used for all flue gas constituents such as oxides of carbon, oxides of nitrogen, oxides of sulfur, hydrocarbons, particulates, etc.
2. Standard reference temperature of 530°R was used.

SECTION 1.0

PANEL BOARD DATA

		PAGE
1.1	CONTROL ROOM DATA	2

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 20,606
Stm Flow, lb/hr: 179879
FW Flow, lb/hr: 199818
% Design Capacity: 98.6

TEST NO.	1				
DATE	4-13-78				
COAL	Eastern Low Fusion				
DESCRIPTION	Part - multiclone out				
TIME OF READING	14:03	15:03	15:42		
West Coal Counter x 400 lb	87931	87957	87976	20,606 lbs/hr	
East Coal Counter x 400 lb	83990	84014	84030		
Stm Flow Integrator x 350 lb	718431	718933	719279	179,879 lbs/hr	98.6%
FW Flow Integrator x 350 lb	818789	819346	819731	199,818 lbs/hr	
Excess Oxygen, %	6.2	5.9	5.6		
DRAFT GAUGES					
Furnace Draft, "H_2O	0	-.2			
FD Fan Outlet Press, "H_2O	2.7	2.0			
Air Inlet Air Heater, "H_2O	2.0	1.5			
Air Outlet Air Heater, "H_2O	1.9	1.5			
Stoker Inlet Pressure, "H_2O	1.3	1.0			
Boiler Out. Pressure, "H_2O	-0.6	-0.6			
Dust Collector Out Pressure, "H_2O	-2.0	-2.0			
Economizer Out Pressure, "H_2O	-3.9	-3.8			
Air Heater Out Pressure, "H_2O	-4.8	-4.6			
Fan Out Pressure, "H_2O	8.2	8.3			
Precip Out. Pressure, "H_2O	0	0			
Overfire Air Press, "H_2O	25	25			

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	911			
Steam Pressure Header, psig	863	869			
Steam Pressure Drum, psig	892	900			
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	188	188			
Air Flow, % (blue)	52	51			
FW Flow, lb/hr x 1000 (red)	200	205			
SH Out Temp, °F (red)	839	840			
AH Out Temp, °F (blue)	708	710			
Steam Pressure, psig (red)	860	855			
TEMP RECORDER					
1-Grate Thermocouple, °F	495	540			
2-Grate Thermocouple, °F	480	610			
3-Grate Thermocouple, °F	580	650			
4-Grate Thermocouple, °F	625	625			
5-Grate Thermocouple, °F	720	700			
6-Grate Thermocouple, °F	610	650			
9-Flue Gas Boiler Out, °F	130	130			
10-Flue Gas Economizer Out, °F	110	117			
11-Flue Gas Air Heater Out, °F	100	100			
12-Stm Coil Air Heater In, °F	100	100			
13-Air Heater Air Out, °F	100	100			

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	30	30			
Feedwater	52	52			
Attemperator	89	89			
SF/AF Ratio	48	49			
FD Damper	82	82			
ID Damper	62	62			
Overfire Air	67	66			
FD Set Point	60	60			
AMPS					
FD Fan Amps	116	116			
ID Fan Amps	24	25			
OFA Fan Amps	97	97			
STOKER (west/east)					
Front Upper OFA Press "H_2O	19.2 / 19.4	18.9 / 19.3			
Front Lower OFA Press "H_2O	4.3 / 4.0	4.3 / 3.8			
Rear Upper OFA Press "H_2O	0.8 / 0.9	0.9 / 0.9			
Rear Lower OFA Press "H_2O	0.5 / 8.0	0.5 / 7.8			
Blr Hopper Reinj. Press "H_2O	1.5 / 15.9	1.3 / 15.8			
Blr Hopper Reinj. yes/no	yes	yes			
Mech Hopper Reinj. Press "H_2O	0.5 / 8.9	0.5 / 9.0			
Mech Hopper Reinj. yes/no	yes	yes			
Relative Grate Speed west/east	5.6 / 6.4	5.6 / 6.4			
Ash Bed Thickness	4"	4"			
Clinkers	heavy on East end				
OFA Fan Static Pressure "H_2O	—	—			

KVB

NOTES

TEST NO: 1 - testing was stopped about ½ way through due to a broken cyclone in the impinger box

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

Coal Flow, lb/hr: _____
Stm Flow, lb/hr: _____
FW Flow, lb/hr: _____
% Design Capacity: _____

CONTROL ROOM DATA
TEST SITE C

TEST NO.	2	3	4		
DATE	[illegible]-78				
COAL	Eastern Low Fusion				
DESCRIPTION	15" O.F.A	25" OFA	5" O.F.A		
	O.F.A FLOW RATE				
TIME OF READING					
West Coal Counter x 400 lb					
East Coal Counter x 400 lb					
Stm Flow Integrator x 350 lb					
FW Flow Integrator x 350 lb					
Excess Oxygen, %	7.8	8.7	7.3		
DRAFT GAUGES					
Furnace Draft, "H_2O	-.1	-0.1 -0.2	-0.1		
FD Fan Outlet Press, "H_2O					
Air Inlet Air Heater, "H_2O					
Air Outlet Air Heater, "H_2O					
Stoker Inlet Pressure, "H_2O					
Boiler Out. Pressure, "H_2O					
Dust Collector Out Pressure, "H_2O					
Economizer Out Pressure, "H_2O					
Air Heater Out Pressure, "H_2O					
ID Fan Out Pressure, "H_2O					
Precip Out. Pressure, "H_2O					
Overfire Air Press, "H_2O	+15.0	+25.0	+5.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig					
Steam Pressure Header, psig					
Steam Pressure Drum, psig					
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	150	150	150		
Air Flow, % (blue)					
FW Flow, lb/hr x 1000 (red)					
SH Out Temp, °F (red)					
AH Out Temp, °F (blue)					
Steam Pressure, psig (red)					
W/E DAMPER					
TEMP RECORDER F U					
1-Grate Thermocouple, °F FL					
2-Grate Thermocouple, °F RU					
3-Grate Thermocouple, °F RL					
4-Grate Thermocouple, °F BIV					
5-Grate Thermocouple, °F MUH					
6-Grate Thermocouple, °F					
9-Flue Gas Boiler Out, °F					
10-Flue Gas Economizer Out, °F					
11-Flue Gas Air Heater Out, °F					
12-Stm Coil Air Heater In, °F					
13-Air Heater Air Out, °F					

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS W/E					
Plant Master Static Front	14.7 / 12.0	20.0 / 23.4	4.0 / 2.8		
Feedwater Rear	[illegible] / 14.4	23.6 / 23.2	4.1 / 3.9		
Attemperator Injection	19.7 / 13.4	25.9 / 16.7	8.0 / 6.8		
SF/AF Ratio					
FD Damper					
ID Damper					
Overfire Air	66 auto	100 auto	40 auto		
FD Set Point					
AMPS					
FD Fan Amps					
ID Fan Amps					
OFA Fan Amps	109	121	85		
STOKER (west/east)					
Front Upper OFA Press "H_2O	12.9 / 12.9	20.8 / 20.0	3.5 / 3.4		
Front Lower OFA Press "H_2O	8.8 / 9.9	16.4 / 14.4	2.4 / 2.7		
Rear Upper OFA Press "H_2O	14.0 / 13.9	22.9 / 22.6	3.7 / 3.8		
Rear Lower OFA Press "H_2O	9.7 / 10.9	16.2 / 17.8	2.5 / 2.9		
Blr Hopper Reinj. Press "H_2O	14.1 / 1.5	17.5 / 3.3	6.8 / 0.5		
Blr Hopper Reinj. yes/no					
Mech Hopper Reinj. Press "H_2O	13.5 / 12.6	16.9 / 15.5	6.1 / 5.5		
Mech Hopper Reinj. yes/no					
Relative Grate Speed west/east					
Ash Bed Thickness					
Clinkers					
OFA Fan Static Pressure "H_2O	29.0	26.5	31.0		

KVB

NOTES

TEST NO: 2 15" O.F.A ~~wet~~ dry bulb Temp O.F.A from 79°F

wet bulb 65°F RH = 48 %

barometric pressure 29.16 " Hg

TEST NO: 3 25" O.F.A dry bulb Temp = 79°F

wet bulb Temp = 61°F RH = 52 %

bar. press. 29.17 " Hg

TEST NO: 4 5" O.F.A dry 80°F

wet 66°F

RH 50%

B.P. 29.17

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

	5	6
Coal Flow, lb/hr:	19,171	18045
Stm Flow, lb/hr:	176,835	167,528
FW Flow, lb/hr:	197,195	185,526
% Design Capacity:	96.9	91.8

TEST NO.	5			6	
DATE	4-20-78				
COAL	Eastern Low fusion				
DESCRIPTION	vary O2 max D.F.A			min O.F.A	
TIME OF READING	9:43		12:27	1404	16:17
West Coal Counter x 400 lb	90940		91007	91041	91094
East Coal Counter x 400 lb	86701		86765	86798	86845
Stm Flow Integrator x 350 lb	778443		779824	780534	781595
FW Flow Integrator x 350 lb	886415		887953	888747	889922
Excess Oxygen, %	7.3	6.5	5.8	7.0	
DRAFT GAUGES				too dirty	
Furnace Draft, "H_2O	-0.1	-0.3	-0.2	-0.2	-0.4
FD Fan Outlet Press, "H_2O	+3.0	2	1.5	3.0	2.6
Air Inlet Air Heater, "H_2O	+1.8	1.4	1.5	2.1	1.9
Air Outlet Air Heater, "H_2O	+1.7	1.5	1.5	2.0	1.8
Stoker Inlet Pressure, "H_2O	+1.3	.8	0.6	1.5	1.1
Boiler Out. Pressure, "H_2O	-.7	-.8	-.7	-.6	-.9
Dust Collector Out Pressure, "H_2O	-2.4	-2.4	-1.8	-2.0	-.9
Economizer Out Pressure, "H_2O	-4.6	-4.4	-3.5	-3.9	-2.5
Air Heater Out Pressure, "H_2O	-5.6	-5.4	-4.2	-4.8	-4.6
ID Fan Out Pressure, "H_2O	+7.6	+7.7	-8.4	+8.1	+7.2
Precip Out. Pressure, "H_2O	0	0	0	0	0
Overfire Air Press, "H_2O	24	24	24	5	8

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910			920	
Steam Pressure Header, psig	860			875	
Steam Pressure Drum, psig	900			900	
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	185	185	180	170
Air Flow, % (blue)	54	50	38	57	600
FW Flow, lb/hr x 1000 (red)	190	200	180	200	180
SH Out Temp, °F (red)	820			805	
AH Out Temp, °F (blue)	720			700	
Steam Pressure, psig (red)	840			845	
TEMP RECORDER					
1-Grate Thermocouple, °F					
2-Grate Thermocouple, °F					
3-Grate Thermocouple, °F					
4-Grate Thermocouple, °F	550		800	600	600
5-Grate Thermocouple, °F	to		to	to	to
6-Grate Thermocouple, °F			1050	710	
9-Flue Gas Boiler Out, °F	800				710
10-Flue Gas Economizer Out, °F					
11-Flue Gas Air Heater Out, °F	estimate				
12-Stm Coil Air Heater In, °F					
13-Air Heater Air Out, °F					

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	28	30	28	27	22
Feedwater	52	58	54	52	57
Attemperator	95	90	78	95	60
SF/AF Ratio	55	50	40	54	57
FD Damper	80	80	81	81	80
ID Damper	70	70	69	69	80
Overfire Air	100	100	100	41	52
FD Set Point	60	59	58	59	57
AMPS					
FD Fan Amps	115			116	
ID Fan Amps	26			24	
OFA Fan Amps	123	123	124	87	
STOKER (west/east)					
Front Upper OFA Press "H_2O	20.4/20.3			8.2/8.1	
Front Lower OFA Press "H_2O	18.0/19.0			7.1/7.7	
Rear Upper OFA Press "H_2O	22.3/22.3			9.0/9.2	
Rear Lower OFA Press "H_2O	16.2/17.4			6.3/7.7	
Blr Hopper Reinj. Press "H_2O	17.8/1.3			12.3/0.6	
Blr Hopper Reinj. yes/no	yes			yes	
Mech Hopper Reinj. Press "H_2O	17.0/15.9			11.5/10.6	
Mech Hopper Reinj. yes/no	yes			yes	
Relative Grate Speed west/east					
Ash Bed Thickness					
Clinkers					
OFA Fan Static Pressure "H_2O					

KVB

NOTES

TEST NO: 5. grate temps went up as O_2 came down
Fireman said they didn't want them higher than 800°F and
some were now above 900°F and 1000°F
Fireman also said that the stack was getting dirty
so O_2 was lowered no more than 6.0% (according to the
control room)

TEST NO:

6. Grate Temps - 600-720°F.
moved U.F.A up to 10" H_2O right after we started, because
of dirty stack. CO in stack 65 ppm

TEST NO:

NO - 200 ppm

TEST NO:

TEST NO:

KVB

Coal Flow, lb/hr: 18,377
Stm Flow, lb/hr: 168,840
FW Flow, lb/hr: 187,200
% Design Capacity: 92.5

CONTROL ROOM DATA
TEST SITE C

TEST NO.	7				
DATE	4-21-78				
COAL	Eastern Low Fusion				
DESCRIPTION	gaseous vary O.F.A.				
	max load normal O.F.A	Front O.F.A low Back O.F.A high	rear O.F.A low front high	low O.F.A low upper high	upper O.F.A low low O.F.A high
TIME OF READING	8:54				11:49
West Coal Counter x 400 lb	91435				91507
East Coal Counter x 400 lb	87181				87243
Stm Flow Integrator x 350 lb	785740				790147
FW Flow Integrator x 350 lb	~~897882~~				~~897942~~
Excess Oxygen, %	7.9	7.1	7.8	7.2	7.5
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.4	-0.4	-0.3	-0.3	-0.4
FD Fan Outlet Press, "H_2O	2.2	2.0	2.2	2.0	2.0
Air Inlet Air Heater, "H_2O	1.6	1.5	1.5	1.5	1.5
Air Outlet Air Heater, "H_2O	1.5	1.5	1.5	1.4	1.5
Stoker Inlet Pressure, "H_2O	.9	1.0	1.0	.9	0.9
Boiler Out. Pressure, "H_2O	-.9	-.6	-.6	-.7	-.7
Dust Collector Out Pressure, "H_2O	-2.4	-2.1	-2.3	-2.0	-2.2
Economizer Out Pressure, "H_2O	-4.5	-4.0	-4.4	-4.0	-4.2
Air Heater Out Pressure, "H_2O	-5.6	-4.9	-5.4	-5.0	-5.1
Fan Out Pressure, "H_2O	7.5	8.0	7.8	8.0	8.0
Precip Out. Pressure, "H_2O	0	0	0	0	0
Overfire Air Press, "H_2O	16	24	19	26	19

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure psig	900				
Steam Pressure Header, psig	860				
Steam Pressure Drum, psig	890				
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	175	170	170	170	170
Air Flow, % (blue)	55	53	54	54	52
FW Flow, lb/hr x 1000 (red)	180	170	180	180	160
SH Out Temp, °F (red)	820				
AH Out Temp, °F (blue)	700				
Steam Pressure, psig (red)	855				
TEMP RECORDER					
1-Grate Thermocouple, °F					
2-Grate Thermocouple, °F	650	650	600	600	600
3-Grate Thermocouple, °F		to	to		to
4-Grate Thermocouple, °F	to	800	750	to	
5-Grate Thermocouple, °F	800			700	750
6-Grate Thermocouple, °F					
9-Flue Gas Boiler Out, °F					
10-Flue Gas Economizer Out, °F					
11-Flue Gas Air Heater Out, °F					
12-Stm Coil Air Heater In, °F					
13-Air Heater Air Out, °F					

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	25	26	26	26	26
Feedwater	52	57	57	52	55
Attemperator	90	90	90	91	91
SF/AF Ratio	45	52	52	52	52
FD Damper	80	80	80	80	80
ID Damper	80	80	80	80	80
Overfire Air	65	70	70	70	70
FD Set Point	56	56	56	56	56
AMPS					
FD Fan Amps	115				
ID Fan Amps	25				
OFA Fan Amps	112	102	112	100	113
STOKER (west/east)					
Front Upper OFA Press "H_2O	13.3/13.4	3.5/3.7	15.8/15.8	23.8/23.6	2.3/2.4
Front Lower OFA Press "H_2O	11.6/12.4	3.0/2.5	15.7/15.6	1.6/1.7	15.2/15.1
Rear Upper OFA Press "H_2O	14.7/15.2	23.0/22.7	0.7/2.2	24.3/24.2	1.8/4.3
Rear Lower OFA Press "H_2O	12.2/12.0	16.8/17.8	1.7/1.7	2.6/2.4	12.9/13.7
Blr Hopper Reinj. Press "H_2O	15.0/.8	17.9/1.0	17.9/.8	18.4/1.3	15.4/.8
Blr Hopper Reinj. yes/no	yes				
Mech Hopper Reinj. Press "H_2O	11.1/12.9	17.4/16.0	15.2/14.2	17.9/16.6	14.9/13.5
Mech Hopper Reinj. yes/no	yes				
Relative Grate Speed west/east	6.4/6.4				
Ash Bed Thickness	5"	5"	5"	5"	
Clinkers					
OFA Fan Static Pressure "H_2O					

KVB

NOTES

TEST NO: 7 moved front dampers down and O.F.A went from 15 to 24 inches H_2O

moved rear down O.F.A - 19" H_2O

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 12,552
Stm Flow, lb/hr: 125,879
FW Flow, lb/hr: 147,224
% Design Capacity: 69.0%

TEST NO.	8				
DATE	4-25-78				
COAL	Eastern Low Fusion				
DESCRIPTION	120 KPPH steam normal conditions				
TIME OF READING	15:14	16:23	17:27	18:08	
West Coal Counter x 400 lb	93554	93572	93591	93600	
East Coal Counter x 400 lb	89220	89238	89258	89265	
Stm Flow Integrator x 350 lb	852371	832786	833173	833414	
FW Flow Integrator x 350 lb	946933	947408	947854	948128	
Excess Oxygen, %	8.7	8.6	8.9		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.4		
FD Fan Outlet Press, "H_2O	1.3	1.2	1.1		
Air Inlet Air Heater, "H_2O	1.0	1.0	0.8		
Air Outlet Air Heater, "H_2O	1.0	1.0	0.9		
Stoker Inlet Pressure, "H_2O	0.5	0.5	0.5		
Boiler Out. Pressure, "H_2O	-0.4	-0.6	-0.6		
Dust Collector Out Pressure, "H_2O	-1.6	-1.7	-1.8		
Economizer Out Pressure, "H_2O	-2.2	-3.0	-3.1		
Air Heater Out Pressure, "H_2O	-4.0	-4.0	-4.0		
ID Fan Out Pressure, "H_2O	8.8	8.7	8.7		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	12.5	12.5	12.5		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	890	900	898		
Steam Pressure Header, psig	862	870	870		
Steam Pressure Drum, psig	878	888	888		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	125	125	124		
Air Flow, % (blue)	40	41	40		
FW Flow, lb/hr x 1000 (red)	145	150	144		
SH Out Temp, °F (red)	790	790	790		
AH Out Temp, °F (blue)	700	700	698		
Steam Pressure, psig (red)	850	850	850		
TEMP RECORDER					
1-Grate Thermocouple, °F	1-650	780	850		
2-Grate Thermocouple, °F	2-660	890	750		
3-Grate Thermocouple, °F	6-685	790	850		
4-Grate Thermocouple, °F	4-850	850	850		
5-Grate Thermocouple, °F	3-900	750	900		
6-Grate Thermocouple, °F	5-905	600	650		
9-Flue Gas Boiler Out, °F	130	132	130		
10-Flue Gas Economizer Out, °F	112	112	112		
11-Flue Gas Air Heater Out, °F	100	100	100		
12-Stm Coil Air Heater In, °F	100	100	100		
13-Air Heater Air Out, °F	100	100	100		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	26	26	23		
Feedwater	56	56	52		
Attemperator	77	77	77		
SF/AF Ratio	40	41	41		
FD Damper	80	80	80		
ID Damper	80	80	80		
Overfire Air	60	60	63		
FD Set Point	57	57	57		
AMPS					
FD Fan Amps	108	110	112		
ID Fan Amps	24	24	24		
OFA Fan Amps	[illegible]	107	111		
STOKER (west/east)					
Front Upper OFA Press "H_2O	10.0/10.0	10.1/9.9	11.8/11.6		
Front Lower OFA Press "H_2O	10.0/9.7	10.2/10.1	11.0/10.1		
Rear Upper OFA Press "H_2O	8.0/11.0	8.4/11.2	12.8/12.5		
Rear Lower OFA Press "H_2O	11.8/8.9	11.1/9.0	[illegible]/10.3		
Blr Hopper Reinj. Press "H_2O	13.7/1.5	13.9/1.3	14.4/1.3		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	12.7/11.7	12.8/12.0	14.5/12.7		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	6.6/6.6	6.6/6.6	6.6/6.6		
Ash Bed Thickness	2"-3"	3"	3"		
Clinkers	fuel #6	OK	OK		
OFA Fan Static Pressure "H_2O	>30"	31.0"			

KVB

Coal Flow, lb/hr: 17,094
Stm Flow, lb/hr: 143,317
FW Flow, lb/hr: 131,295
% Design Capacity: 89.5

CONTROL ROOM DATA
TEST SITE C

TEST NO.	9				
DATE	5-1-78				
COAL	Eastern Low Fusion				
DESCRIPTION	max load normal o FA				
TIME OF READING	13:11	1412	1534	16:46	17:49
West Coal Counter x 400 lb	94697	94719	94746	94772	94794
East Coal Counter x 400 lb	90418	90441	90479	90497	90519
Stm Flow Integrator x 350 lb	857474	858161	858798	859355	859836
FW Flow Integrator x 350 lb	974361	974898	975601	976217	976761
Excess Oxygen, %	7.1	7.1	7.3	6.9	7.1
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.2	-0.1	-0.2	
FD Fan Outlet Press, "H_2O	2.2	2.4	2.0	2.1	
Air Inlet Air Heater, "H_2O	1.7	1.7	1.5	1.6	
Air Outlet Air Heater, "H_2O	1.7	1.6	1.4	1.5	
Stoker Inlet Pressure, "H_2O	1.1	1.1	0.9	1.0	
Boiler Out. Pressure, "H_2O	-0.6	-0.5	-0.4	-0.6	
Dust Collector Out Pressure, "H_2O	-1.8	-1.9	-1.5	-2.0	
Economizer Out Pressure, "H_2O	-3.6	-3.7	-3.0	-3.8	
Air Heater Out Pressure, "H_2O	-4.6	-4.6	-3.8	-4.7	
ID Fan Out Pressure, "H_2O	8.6	8.5	9.0	8.4	
Precip Out. Pressure, "H_2O	0	0	0	0	
Overfire Air Press, "H_2O	14.5	15	14	15	

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	910	910	910	
Steam Pressure Header, psig	870	865	870	875	
Steam Pressure Drum, psig	890	890	895	900	
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	170	170	160	170	
Air Flow, % (blue)	51	51	47	51	
FW Flow, lb/hr x 1000 (red)	190	190	175	185	
SH Out Temp, °F (red)	835	840	830	830	
AH Out Temp, °F (blue)	717	720	715	710	
Steam Pressure, psig (red)	860	855	840	860	
TEMP RECORDER					
1-Grate Thermocouple, °F	900	700	800	713	
2-Grate Thermocouple, °F	745	780	800	639	
3-Grate Thermocouple, °F	710	580	780	702	
4-Grate Thermocouple, °F	770	665	780	735	
5-Grate Thermocouple, °F	635	725	630	724	
6-Grate Thermocouple, °F	705	670	590	647	
9-Flue Gas Boiler Out, °F	135	135	140	140	
10-Flue Gas Economizer Out, °F	112	112	120	118	
11-Flue Gas Air Heater Out, °F	90	90	90	90	
12-Stm Coil Air Heater In, °F	90	90	90	90	
13-Air Heater Air Out, °F	90	90	90	90	

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	32	32	31	31	
Feedwater	52	52	50	50	
Attemperator	91	91	91	91	
SF/AF Ratio	50	51	52	52	
FD Damper	60	90	80	80	
ID Damper	80	80	80	80	
Overfire Air	60	59	59	60	
FD Set Point	59	59	59	59	
AMPS					
FD Fan Amps	120	119	111	112	
ID Fan Amps	25	25	25	25	
OFA Fan Amps	104	105	101	105	
STOKER (west/east)					
Front Upper OFA Press "H_2O	9.0/9.5	9.0/9.0	9.0/9.0	9.5/9.0	
Front Lower OFA Press "H_2O	9.0/10.0	9.0/9.5	9.0/10.0	9.5/10.0	
Rear Upper OFA Press "H_2O	9.5/10.0	9.5/10.0	10.0/10.0	10.0/10.0	
Rear Lower OFA Press "H_2O	10.0/9.0	10.0/9.0	10.0/9.0	10.0/9.0	
Blr Hopper Reinj. Press "H_2O	16.0/16.5	16.5/16.5	16.0/16.5	16.0/16.5	
Blr Hopper Reinj. yes/no	yes	yes	yes	yes	
Mech Hopper Reinj. Press "H_2O	12.5/12.5	12.5/12.5	12.0/12.5	12.5/12.5	
Mech Hopper Reinj. yes/no	yes	yes	yes	yes	
Relative Grate Speed west/east	5.8/5.6	5.8/5.6	5.8/5.6	5.8/5.6	
Ash Bed Thickness	3"	3"	3"	3"	
Clinkers	OK	OK	between grates 2 & 3	5-7" at 2 & 3	
OFA Fan Static Pressure "H_2O	29.0	29.0	29.0	29.0	

KVB

NOTES

TEST NO: T_{dry} = 83°F T_{wet} = 68°F RH = 28%

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 19200
Stm Flow, lb/hr: 169,782
FW Flow, lb/hr: 191,927
% Design Capacity: 93.0%

TEST NO.	10				
DATE	5-3-78				
COAL	Eastern Low fusion				
DESCRIPTION	NO Flyash reinjection				
TIME OF READING	9:09	10:04	11:04	11:54	
West Coal Counter x 400 lb	93455	95477	95501	95521	
East Coal Counter x 400 lb	91217	91239	91263	91283	
Stm Flow Integrator x 350 lb	874131	874578	875065	875465	
FW Flow Integrator x 350 lb	993229	993731	994282	994737	
Excess Oxygen, %	6.9	7.0	6.9	6.8	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.3	-0.2	-0.2		
FD Fan Outlet Press, "H_2O	2.1	2.2	2.1		
Air Inlet Air Heater, "H_2O	1.6	1.6	1.5		
Air Outlet Air Heater, "H_2O	1.5	1.5	1.5		
Stoker Inlet Pressure, "H_2O	1.0	1.0	1.0		
Boiler Out. Pressure, "H_2O	-0.6	-0.6	-0.6		
Dust Collector Out Pressure, "H_2O	-2.0	-2.1	-2.1		
Economizer Out Pressure, "H_2O	-3.9	-4.0	-3.9		
Air Heater Out Pressure, "H_2O	-4.7	-4.9	-4.8		
ID Fan Out Pressure, "H_2O	+8.2	8.1	8.2		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	17	16.5	16		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	910	925		
Steam Pressure Header, psig	870	867	887		
Steam Pressure Drum, psig	897	895	912		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	170	175	170		
Air Flow, % (blue)	52	52	50		
FW Flow, lb/hr x 1000 (red)	180	180	195		
SH Out Temp, °F (red)	830	835	825		
AH Out Temp, °F (blue)	700	710	710		
Steam Pressure, psig (red)	858	850	870		
TEMP RECORDER					
1-Grate Thermocouple, °F	580	710	630		
2-Grate Thermocouple, °F	670	687	750		
3-Grate Thermocouple, °F	620	682	685		
4-Grate Thermocouple, °F	650	745	690		
5-Grate Thermocouple, °F	670	727	690		
6-Grate Thermocouple, °F	580	645	590		
9-Flue Gas Boiler Out, °F	130	130	130		
10-Flue Gas Economizer Out, °F	110	111	111		
11-Flue Gas Air Heater Out, °F	97	99	99		
12-Stm Coil Air Heater In, °F	97	97	95		
13-Air Heater Air Out, °F	97	99	100		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	34	33	33		
Feedwater	50	50	50		
Attemperator	91	94	91		
SF/AF Ratio	50	51	51		
FD Damper	80	80	80		
ID Damper	80	80	80		
Overfire Air	62	61	61		
FD Set Point	59	59	59		
AMPS					
FD Fan Amps	119	119	119		
ID Fan Amps	25	25	25		
OFA Fan Amps	105	105	105		
STOKER (west/east)					
Front Upper OFA Press "H_2O	10.0/10.5	10.0/10.0	10.0/10.0		
Front Lower OFA Press "H_2O	10.0/10.0	10.0/10.0	10.0/10.0		
Rear Upper OFA Press "H_2O	10.0/10.5	9.5/10.0	10.0/10.0		
Rear Lower OFA Press "H_2O	11.5/9.5	11.0/9.0	11.5/9.0		
* Blr Hopper Reinj. Press "H_2O	.4/.3	.5/.4	1.4/1.2		
Blr Hopper Reinj. yes/no	no	no	no		
Mech Hopper Reinj. Press "H_2O	14.5/14.5	14.0/14.0	14.5/14.5		
Mech Hopper Reinj. yes/no	no	no	no		
Relative Grate Speed west/east	5.8/5.6	5.8/5.6	5.8/5.6		
Ash Bed Thickness	3"	3"	3"		
Clinkers	no	no	except #2 8" pile		
OFA Fan Static Pressure "H_2O					

* Stack tube manometer used

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 18,888
Stm Flow, lb/hr: 169,740
FW Flow, lb/hr: 193,225
% Design Capacity: 93.0

TEST NO.	11				
DATE	5-3-78				
COAL	Eastern Low Fusion				
DESCRIPTION	Boiler Hopper Reinjection	only			
TIME OF READING	16:04	16:49	18:07	18:53	
West Coal Counter x 400 lb	95619	95640	95667	95686	
East Coal Counter x 400 lb	91381	91402	91429	91447	
Stm Flow Integrator x 350 lb	877473	877919	878470	878834	
FW Flow Integrator x 350 lb	997021	997529	998156	998576	
Excess Oxygen, %	6.8	6.9	6.9		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.1		
FD Fan Outlet Press, "H_2O	2.2	2.1	2.2		
Air Inlet Air Heater, "H_2O	1.6	1.6	1.6		
Air Outlet Air Heater, "H_2O	1.5	1.5	1.5		
Stoker Inlet Pressure, "H_2O	1.0	1.0	1.0		
Boiler Out. Pressure, "H_2O	-0.6	-0.5	-0.5		
Dust Collector Out Pressure, "H_2O	-2.0	-2.0	-2.0		
Economizer Out Pressure, "H_2O	-4.0	-3.8	-3.8		
Air Heater Out Pressure, "H_2O	-4.9	-4.8	-4.8		
ID Fan Out Pressure, "H_2O	8.0	8.0	8.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	16	16	16		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	910	910		
Steam Pressure Header, psig	875	870	870		
Steam Pressure Drum, psig	897	900	895		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	170	170	170		
Air Flow, % (blue)	52	52	52		
FW Flow, lb/hr x 1000 (red)	190	190	180		
SH Out Temp, °F (red)	820	820	820		
AH Out Temp, °F (blue)	710	710	705		
Steam Pressure, psig (red)	855	850	845		
TEMP RECORDER					
1-Grate Thermocouple, °F	600	590	645		
2-Grate Thermocouple, °F	622	620	680		
3-Grate Thermocouple, °F	555	410	545		
4-Grate Thermocouple, °F	718	740	800		
5-Grate Thermocouple, °F	827	620	810		
6-Grate Thermocouple, °F	530	681	730		
9-Flue Gas Boiler Out, °F	135	138	140		
10-Flue Gas Economizer Out, °F	125	125	130		
11-Flue Gas Air Heater Out, °F	100	103	105		
12-Stm Coil Air Heater In, °F	95	95	95		
13-Air Heater Air Out, °F	105	107	111		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	34	35	35		
Feedwater	50	50	50		
Attemperator	90	91	90		
SF/AF Ratio	51	53	52		
FD Damper	80	80	80		
ID Damper	80	80	80		
Overfire Air	62	64	64		
FD Set Point	60	59	59		
AMPS					
FD Fan Amps	119	119	118		
ID Fan Amps	25	26	25		
OFA Fan Amps	105	106	106		
STOKER (west/east)					
Front Upper OFA Press "H_2O	10.0/10.0	10.0/10.0	10.0/10.0		
Front Lower OFA Press "H_2O	10.0/10.0	10.0/10.0	10.0/10.0		
Rear Upper OFA Press "H_2O	9.5/10.0	9.0/10.0	9.0/10.0		
Rear Lower OFA Press "H_2O	11.0/11.0	11.0/9.0	11.0/9.0		
Blr Hopper Reinj. Press "H_2O	16.5/17.0	16.5/17.0	16.5/17.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	12.5/12.5	13.0/13	13.0/12.5		
Mech Hopper Reinj. yes/no	no	no	no		
Relative Grate Speed west/east	5.8/5.6	5.8/5.6	5.8/6.6		
Ash Bed Thickness	3"	3"	3"		
Clinkers	grate 2 5"	grates 2 & 3 7"	2 & 3 small		
OFA Fan Static Pressure "H_2O		29.0"			

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 18,292
Stm Flow, lb/hr: 169,816
FW Flow, lb/hr: 188,546
% Design Capacity: 93.08

TEST NO.	12				
DATE	5-4-78				
COAL	Eastern Low Fusion				
DESCRIPTION	Max Load 25" O.F.A				
TIME OF READING	10:29	11:46	12:41	13:34	
West Coal Counter x 400 lb	95977	96005	96027	96047	
East Coal Counter x 400 lb	91756	91785	91807	91827	
Stm Flow Integrator x 350 lb	885164	885786	886235	886660	
FW Flow Integrator x 350 lb	5826	6511	7012	7487	
Excess Oxygen, %	7.3	7.0	7.3	7.0	
DRAFT GAUGES	1.8		-		
Furnace Draft, "H_2O	-0.2	-0.1	-0.2		
FD Fan Outlet Press, "H_2O	1.9	1.9	1.8		
Air Inlet Air Heater, "H_2O	1.4	1.3	1.3		
Air Outlet Air Heater, "H_2O	1.3	1.3	1.2		
Stoker Inlet Pressure, "H_2O	0.9	0.9	0.8		
Boiler Out. Pressure, "H_2O	-0.6	-0.6	-0.6		
Dust Collector Out Pressure, "H_2O	-2.0	-2.0	-2.0		
Economizer Out Pressure, "H_2O	-4.0	-3.9	-3.8		
Air Heater Out Pressure, "H_2O	-4.7	-4.8	-4.8		
Fan Out Pressure, "H_2O	8.0	8.0	8.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	20.0	20.0	20.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	900	915	915		
Steam Pressure Header, psig	865	880	878		
Steam Pressure Drum, psig	887	910	903		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	170	190	170		
Air Flow, % (blue)	48	46	45		
FW Flow, lb/hr x 1000 (red)	185	190	192		
SH Out Temp, °F (red)	825	830	820		
AH Out Temp, °F (blue)	705	705	707		
Steam Pressure, psig (red)	850	860	867		
TEMP RECORDER	estimated				
1-Grate Thermocouple, °F	↑	800	760		
2-Grate Thermocouple, °F	600°F	750	800		
3-Grate Thermocouple, °F	To	775	697		
4-Grate Thermocouple, °F		↑	725		
5-Grate Thermocouple, °F	800°F	Do Not	725		
6-Grate Thermocouple, °F	↓	↓ Work	645		
9-Flue Gas Boiler Out, °F	122	123	123		
10-Flue Gas Economizer Out, °F	100	99	94		
11-Flue Gas Air Heater Out, °F	90	97	99		
12-Stm Coil Air Heater In, °F	90	95	95		
13-Air Heater Air Out, °F	900	105	102		

chart not working

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	31	32	32		
Feedwater	50	50	50		
Attemperator	87	86	85		
SF/AF Ratio	45	46	46		
FD Damper	80	80	80		
ID Damper	80	80	80		
Overfire Air	79	80	80		
FD Set Point	59	59	59		
AMPS					
FD Fan Amps	116	116	116		
ID Fan Amps	25	25	25		
OFA Fan Amps	120	120	120		
STOKER (west/east)					
Front Upper OFA Press "H_2O	17.5/17.0	17.5/17.0	17.0/17.0		
Front Lower OFA Press "H_2O	17.0/17.0	17.5/17.0	17.0/17.0		
Rear Upper OFA Press "H_2O	18.0/18.0	18.0/18.0	18.0/18.0		
Rear Lower OFA Press "H_2O	15.5/16.0	15.0/16.0	15.0/16.5		
Blr Hopper Reinj. Press "H_2O	19.0/19.0	19.0/18.5	19.0/18.5		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	16.0/15.0	15.5/15.0	16.0/15.5		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.8/5.6	5.8/5.6	5.8/5.6		
Ash Bed Thickness	3'-5"	3'-5"			
Clinkers	* 2-4	#2 to 4			
OFA Fan Static Pressure "H_2O	27.0"				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 17,746
Stm Flow, lb/hr: 165,634
FW Flow, lb/hr: 185,007
% Design Capacity: 90.8%

TEST NO.	13				
DATE	5-4-78				
COAL	Eastern Low Fusion				
DESCRIPTION	max load 5" O.F.A.				
TIME OF READING	17:01	18:04	19:04	19:23	
West Coal Counter x 400 lb	96125	96147	96169	96175	
East Coal Counter x 400 lb	91904	91927	91951	91959	
Stm Flow Integrator x 350 lb	888308	888798	889272	889428	
FW Flow Integrator x 350 lb	9325	9875	10403	10576	
Excess Oxygen, %	7.4	6.5	6.8		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.2	-0.2		
FD Fan Outlet Press, "H_2O	2.5	2.0	2.5		
Air Inlet Air Heater, "H_2O	1.9	1.3	1.8		
Air Outlet Air Heater, "H_2O	1.8	1.3	1.7		
Stoker Inlet Pressure, "H_2O	1.4	1.0	1.2		
Boiler Out. Pressure, "H_2O	-0.6	-0.5	-0.4		
Dust Collector Out Pressure, "H_2O	-2.0	-1.6	-1.7		
Economizer Out Pressure, "H_2O	-4.2	-3.2	-3.4		
Air Heater Out Pressure, "H_2O	-5.2	4.0	-4.2		
ID Fan Out Pressure, "H_2O	7.9	8.6	8.4		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	5.0	5.0	5.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	912	910	910		
Steam Pressure Header, psig	878	870	880		
Steam Pressure Drum, psig	900	875	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	172	160	165		
Air Flow, % (blue)	50	49	50		
FW Flow, lb/hr x 1000 (red)	200	175	195		
SH Out Temp, °F (red)	820	810	820		
AH Out Temp, °F (blue)	705	695	700		
Steam Pressure, psig (red)	860	860	860		
TEMP RECORDER					
1-Grate Thermocouple, °F	590	700	660		
2-Grate Thermocouple, °F	590	720	710		
3-Grate Thermocouple, °F	665	750	632		
4-Grate Thermocouple, °F	720	700	678		
5-Grate Thermocouple, °F	700	695	691		
6-Grate Thermocouple, °F	685	610	670		
9-Flue Gas Boiler Out, °F	127	130	130		
10-Flue Gas Economizer Out, °F	100	100	98		
11-Flue Gas Air Heater Out, °F	99	99	101		
12-Stm Coil Air Heater In, °F	97	97	97		
13-Air Heater Air Out, °F	105	107	106		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	31	30	31		
Feedwater	50	50	50		
Attemperator	88	86	90		
SF/AF Ratio	50	51	51		
FD Damper	80	80	80		
ID Damper	80	80	80		
Overfire Air	44	42	43		
FD Set Point	59	59	59		
AMPS					
FD Fan Amps	119	119	119		
ID Fan Amps	24	24	24		
OFA Fan Amps	90	90	90		
STOKER (west/east)					
Front Upper OFA Press "H_2O	6.0/6.5	6.0/5.5	6.0/6.0		
Front Lower OFA Press "H_2O	6.0/6.0	5.5/6.0	6.0/6.0		
Rear Upper OFA Press "H_2O	6.0/6.0	6.0/6.0	6.0/6.5		
Rear Lower OFA Press "H_2O	5.5/5.5	5.0/5.5	6.0/6.0		
Blr Hopper Reinj. Press "H_2O	9.5/10.0	10.0/10.0	10.0/10.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	8.0/8.0	8.0/8.5	8.5/8.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.8/5.6	5.8/5.6	5.8/5.6		
Ash Bed Thickness	3.5"	3.5"			
Clinkers	grates 2 to 4	OK			
OFA Fan Static Pressure "H_2O	30.5				

KVB

NOTES

TEST NO: May 4 – T_{dry} = 73 °F

T_{wet} = 62 °F

RH = 55 %

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 17,526
Stm Flow, lb/hr: 169,658
FW Flow, lb/hr: 187,757
% Design Capacity: 93.0

TEST NO.	14				
DATE	5/9/78				
COAL	Eastern	Low Fusion			
DESCRIPTION	Bias upper OFA				
TIME OF READING	13.56	15.09	16.01	16.28	
West Coal Counter x 400 lb	97105	97132	97152	97162	17,526
East Coal Counter x 400 lb	92800	92826	92844	92854	
Stm Flow Integrator x 350 lb	911312	911902	912322	912540	169,658
F.. Flow Integrator x 350 lb	31343	31991	32457	32702	187,757
Excess Oxygen, %	7.4	7.4	7.6		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.2		
FD Fan Outlet Press, "H_2O	1.9	2.1	2.2		
Air Inlet Air Heater, "H_2O	1.4	1.5	1.5		
Air Outlet Air Heater, "H_2O	1.3	1.5	1.5		
Stoker Inlet Pressure, "H_2O	0.8	1.0	1.0		
Boiler Out. Pressure, "H_2O	-.7	-.7	-.6		
Dust Collector Out Pressure, "H_2O	-2.1	-2.1	-2.0		
Economizer Out Pressure, "H_2O	-3.8	-4.0	-3.7		
Air Heater Out Pressure, "H_2O	-4.7	-4.9	-4.6		
Fan Out Pressure, "H_2O	8.2	8.0	8.1		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	22.5	22.5	22.5		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	912	910	910		
Steam Pressure Header, psig	860	875	880		
Steam Pressure Drum, psig	900	900	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	165	165	170		
Air Flow, % (blue)	50	52	54		
FW Flow, lb/hr x 1000 (red)	187	190	185		
SH Out Temp, °F (red)	830	830	820		
AH Out Temp, °F (blue)	707	712	700		
Steam Pressure, psig (red)	850	852	848		
TEMP RECORDER					
1-Grate Thermocouple, °F	591	630	632		
2-Grate Thermocouple, °F	601	706	697		
3-Grate Thermocouple, °F	725	720	691		
4-Grate Thermocouple, °F	743	717	692		
5-Grate Thermocouple, °F	775	739	673		
6-Grate Thermocouple, °F	720	655	668		
9-Flue Gas Boiler Out, °F	130	130	130		
10-Flue Gas Economizer Out, °F	110	111	110		
11-Flue Gas Air Heater Out, °F	145 ?	125 ?	138 ?		
12-Stm Coil Air Heater In, °F	98	99	98		
13-Air Heater Air Out, °F	105	103	105		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	31	31	31		
Feedwater	50	51	50		
Attemperator	90	90	91		
SF/AF Ratio	50	52	52		
FD Damper	90	90	90		
ID Damper	55	55	55		
Overfire Air	69	68	68		
FD Set Point	58	57	57		
AMPS					
FD Fan Amps	115	115	115		
ID Fan Amps	24	24	25		
OFA Fan Amps	101	101	101		
STOKER (west/east)					
Front Upper OFA Press "H_2O	21.0/20.0	20.0/20.0	20.5/20.0		
Front Lower OFA Press "H_2O	6.0/6.5	6.0/6.5	6.0/6.5		
Rear Upper OFA Press "H_2O	21.0/20.0	20.0/20.0	20.0/20.0		
Rear Lower OFA Press "H_2O	6.0/6.0	5.5/6.0	5.5/6.0		
Blr Hopper Reinj. Press "H_2O	19.5/20.0	19.0/19.5	19.5/19.5		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	16.0/16.5	16.0/16.0	16.0/16.5		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.6/5.6	5.6/5.6	5.6/5.6		
Ash Bed Thickness	3"-5"	3"-5"	3"-5"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O	28.5				

KVB

NOTES

TEST NO:

T dry = 82°F
T wet = 69°F
RH = 52%

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

Coal Flow, lb/hr: 17,468
Stm Flow, lb/hr: 166,538
FW Flow, lb/hr: 184,747
% Design Capacity: 91.3

CONTROL ROOM DATA
TEST SITE C

TEST NO.	15				
DATE	5-10-78				
COAL	Eastern	Low Fusion			
DESCRIPTION	Bias Lower OFA				
TIME OF READING	14:08	16:59	18:29	19:24	
West Coal Counter x 400 lb	97609	97673	97707	97727	
East Coal Counter x 400 lb	93251	93313	93343	93363	
Stm Flow Integrator x 350 lb	921772	923148	923847	924228	
[illegible] Flow Integrator x 350 lb	43007	44531	45308	45787	
Excess Oxygen, %	7.5	7.2 7.0	7.4	7.2	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2 -0.2	-0.2		
FD Fan Outlet Press, "H_2O	2.1	2.1 1.8	1.7		
Air Inlet Air Heater, "H_2O	1.5	1.5 1.3	1.3		
Air Outlet Air Heater, "H_2O	1.5	1.5 1.3	1.2		
Stoker Inlet Pressure, "H_2O	1.0	1.0 .90	.80		
Boiler Out. Pressure, "H_2O	-0.6	-0.6 -0.5	-0.6		
Dust Collector Out Pressure, "H_2O	-2.2	-2.2 -1.8	-2.0		
Economizer Out Pressure, "H_2O	-4.0	-4.0 -3.5	-3.7		
Air Heater Out Pressure, "H_2O	-5.0	-5.0 -4.4	-4.5		
[illegible] Fan Out Pressure, "H_2O	8.0	8.0 8.4	8.3		
Precip Out. Pressure, "H_2O	0	0 0	0		
Overfire Air Press, "H_2O	17.5	17.0 17.0	17.5		

Sheet 2 of 4

KVB

TEST NO.						
PRESSURE GAUGES						
Feedwater Pressure, psig	915	910	920	900		
Steam Pressure Header, psig	875	870	890	865		
Steam Pressure Drum, psig	902	897	910	890		
STRIP CHARTS						
Stm Flow, lb/hr x 1000 (red)	167	175	170	165		
Air Flow, % (blue)	51	51	50	48		
FW Flow, lb/hr x 1000 (red)	190	200	186	180		
SH Out Temp, °F (red)	835	840	830	830		
AH Out Temp, °F (blue)	710	715	710	700		
Steam Pressure, psig (red)	860	850	865	850		
TEMP RECORDER						
1-Grate Thermocouple, °F	770	750	710	650		
2-Grate Thermocouple, °F	792	740	867	825		
3-Grate Thermocouple, °F	655	700	820	890		
4-Grate Thermocouple, °F	730	735	790	765		
5-Grate Thermocouple, °F	735	690	725	732		
6-Grate Thermocouple, °F	615	640	646	719		
9-Flue Gas Boiler Out, °F	135	135	135	135		
10-Flue Gas Economizer Out, °F	119	120	120	115		
11-Flue Gas Air Heater Out, °F	152	120	118	99		
12-Stm Coil Air Heater In, °F	100	100	101	100		
13-Air Heater Air Out, °F	100	99	99	99		

Sheet 3 of 4

KVB

TEST NO.						
CONTROLS						
Plant Master	31	31	30	30		
Feedwater	50	50	49	49		
Attemperator	90	90	90	90		
SF/AF Ratio	50	50	51	48		
FD Damper	90	90	90	90		
ID Damper	51	51	51	51		
Overfire Air	70	67	66	68		
FD Set Point	57	57	57	56		
AMPS						
FD Fan Amps	117	117	116	112		
ID Fan Amps	25	25	25	25		
OFA Fan Amps	112	112	110	112		
STOKER (west/east)						
Front Upper OFA Press "H_2O	5.5/5.5	6.0/5.5		6.0/6.0		
Front Lower OFA Press "H_2O	15.5/15.5	15.5/15.0		15.5/15.5		
Rear Upper OFA Press "H_2O	5.0/5.0	4.5/5.0		5.0/5.0		
Rear Lower OFA Press "H_2O	14.0/15.0	13.5/15.0		14.0/15.0		
Blr Hopper Reinj. Press "H_2O	17.5/18.0	17.0/17.5		18.0/18.0		
Blr Hopper Reinj. yes/no	yes	yes		yes		
Mech Hopper Reinj. Press "H_2O	15.0/15.0	14.0/15.0		15.0/15.5		
Mech Hopper Reinj. yes/no	yes	yes		yes		
Relative Grate Speed west/east	5.6/5.6	5.6/5.6		5.6/5.6		
Ash Bed Thickness	3"	3'-5"		3"-5"		
Clinkers	ok	ok		ok		
OFA Fan Static Pressure "H_2O		28"				

KVB

NOTES

TEST NO: 15 At 12:00 Site C Brought up #7 boiler, Therefore load on #8 started bouncing between 140 & 170 K lbs/hr.

TEST NO: 15. Cyclone broke at blrout so first ½ of test 14:00 to 17:00 was done at the mech. out and second ½ at Blr. out.

TEST NO:

TEST NO:

TEST NO:

KVB

Coal Flow, lb/hr: 17 427
Stm Flow, lb/hr: 164,204
FW Flow, lb/hr: 191,006
% Design Capacity: 92.7

CONTROL ROOM DATA
TEST SITE C

TEST NO.	16				
DATE	5-11-78				
COAL	Eastern Low Fusion				
DESCRIPTION	Bias Front O.F.A.				
TIME OF READING	19:32	20:30	21:31	22:09	
West Coal Counter x 400 lb	98189	98208	98232	98246	
East Coal Counter x 400 lb	93800	93821	93843	93857	
Stm Flow Integrator x 350 lb	934141	934603	935098	935406	
Fw Flow Integrator x 350 lb	56845	57366	57927	58273	
Excess Oxygen, %	7.4	7.4	7.4		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.2		
FD Fan Outlet Press, "H_2O	2.0	2.2	2.1		
Air Inlet Air Heater, "H_2O	1.5	1.5	1.5		
Air Outlet Air Heater, "H_2O	1.5	1.5	1.5		
Stoker Inlet Pressure, "H_2O	1.0	1.0	0.9		
Boiler Out. Pressure, "H_2O	-.6	-0.7	-0.7		
Dust Collector Out Pressure, "H_2O	-2.0	-2.1	-2.0		
Economizer Out Pressure, "H_2O	-2.8	-4.1	-4.0		
Air Heater Out Pressure, "H_2O	-4.5	-5.0	-4.9		
Fan Out Pressure, "H_2O	8.3	8.0	8.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	17	17	17		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	910	910		
Steam Pressure Header, psig	855	870	870		
Steam Pressure Drum, psig	900	895	895		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	165	170	170		
Air Flow, % (blue)	50	52	51		
FW Flow, lb/hr x 1000 (red)	180	190	190		
SH Out Temp, °F (red)	825	825	820		
AH Out Temp, °F (blue)	707	707	700		
Steam Pressure, psig (red)	850	850	845		
TEMP RECORDER					
1-Grate Thermocouple, °F	720	665	608		
2-Grate Thermocouple, °F	720	675	710		
3-Grate Thermocouple, °F	640	690	720		
4-Grate Thermocouple, °F	700	735	700		
5-Grate Thermocouple, °F	695	735	720		
6-Grate Thermocouple, °F	610	640	605		
9-Flue Gas Boiler Out, °F	132	135	135		
10-Flue Gas Economizer Out, °F	116	115	120		
11-Flue Gas Air Heater Out, °F	155	155	155		
12-Stm Coil Air Heater In, °F	105	101	101		
13-Air Heater Air Out, °F	101	101	105		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	31	31	31		
Feedwater	50	49	49		
Attemperator	87	90	89		
SF/AF Ratio	50	52	51		
FD Damper	90	90	90		
ID Damper	50	51	51		
Overfire Air	66	65	65		
FD Set Point	56	56	56		
AMPS					
FD Fan Amps	115	115	116		
ID Fan Amps	25	25	25		
OFA Fan Amps	107	107	108		
STOKER (west/east)					
Front Upper OFA Press "H_2O	15.0/15.0	15.0/15.0	15.0/15.0		
Front Lower OFA Press "H_2O	15.0/15.0	15.0/15.0	15.0/15.0		
Rear Upper OFA Press "H_2O	5.0/5.0	5.0/5.0	5.0/5.0		
Rear Lower OFA Press "H_2O	5.0/4.5	5.5/5.0	5.5/5.0		
Blr Hopper Reinj. Press "H_2O	17.5/17.5	17.5/17.5	17.5/18.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	15.0/15.0	15.0/15.0	15.0/15.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.6/5.6	5.6/5.6	5.6/5.6		
Ash Bed Thickness	3"	3"	3"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O		28.0"			

KVB

NOTES

TEST NO: 16. Cyclone Tripped on #2 Boiler just before Starting test and load jumped up for a minute. The Problem was immediatly corrected

TEST NO: T_{dry} = 78°F
T_{wet} = 70°F
RH = 68%

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 14,400
Stm Flow, lb/hr: 138,751
FW Flow, lb/hr: 132,250
% Design Capacity: 76.0

TEST NO.	17		18		
DATE	5-12-78				
COAL	Eastern Low Fusion				
DESCRIPTION	140 klb./hr var O2				
	High OFA		Low OFA		
TIME OF READING	10:07	11:45		12:47	
West Coal Counter x 400 lb	98422	98452		98470	
East Coal Counter x 400 lb	94018	94048		94066	
Stm Flow Integrator x 350 lb	939040	939696		940097	
[illegible] Flow Integrator x 350 lb	62578	63288		63738	
Excess Oxygen, %	8.4	7.8 6.9	6.0	7.0 7.8	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1		-0.2		
FD Fan Outlet Press, "H_2O	1.7		1.5		
Air Inlet Air Heater, "H_2O	1.2		1.1		
Air Outlet Air Heater, "H_2O	1.3		1.1		
Stoker Inlet Pressure, "H_2O	.8		.6		
Boiler Out. Pressure, "H_2O	-.6		-.5		
Dust Collector Out Pressure, "H_2O	-2.0		-1.4		
Economizer Out Pressure, "H_2O	-3.7		-3.0		
Air Heater Out Pressure, "H_2O	-4.6		-3.4		
Fan Out Pressure, "H_2O	8.2		8.6		
Precip Out. Pressure, "H_2O	0		0 lowered to	moved damper	
Overfire Air Press, "H_2O	20.5		10.5	vent to 20.0	

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	905		900		
Steam Pressure Header, psig	875		870		
Steam Pressure Drum, psig	895		880		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	140		140		
Air Flow, % (blue)	46	40 32	40		
FW Flow, lb/hr x 1000 (red)	140		155		
SH Out Temp, °F (red)	840	stopped	800		
AH Out Temp, °F (blue)	700		680		
Steam Pressure, psig (red)	850		855		
TEMP RECORDER					
1-Grate Thermocouple, °F	650		835		
2-Grate Thermocouple, °F	630		890		
3-Grate Thermocouple, °F	685		935		
4-Grate Thermocouple, °F	680		890		
5-Grate Thermocouple, °F	650		920		
6-Grate Thermocouple, °F	520		800		
9-Flue Gas Boiler Out, °F	120		120		
10-Flue Gas Economizer Out, °F	98		98		
11-Flue Gas Air Heater Out, °F	85		85		
12-Stm Coil Air Heater In, °F	91		95		
13-Air Heater Air Out, °F	93		95		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	31		29		
Feedwater	50		50		
Attemperator	86		76		
SF/AF Ratio	46	40 32	36		
FD Damper	90		90		
ID Damper	51		52		
Overfire Air	82		57		
FD Set Point	60		60		
AMPS					
FD Fan Amps	114		112		
ID Fan Amps	25		24		
OFA Fan Amps	123		95		
STOKER (west/east)					
Front Upper OFA Press "H_2O	18.0/18.0		6.5/6.0		
Front Lower OFA Press "H_2O	18.0/18.0		6.0/6.5		
Rear Upper OFA Press "H_2O	19.5/20.0		5.0/5.0		
Rear Lower OFA Press "H_2O	16.0/16.5		5.0/5.0		
Blr Hopper Reinj. Press "H_2O	19.0/19.5		19.0/20.0		
Blr Hopper Reinj. yes/no	yes		yes		
Mech Hopper Reinj. Press "H_2O	16.0/16.0		15.0/15.0		
Mech Hopper Reinj. yes/no	yes		yes		
Relative Grate Speed west/east	5.6/5.6		5.6/5.6		
Ash Bed Thickness	3"		3"		
Clinkers	ok		ok		
OFA Fan Static Pressure "H_2O	27.0				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 17214
Stm Flow, lb/hr: 148000
FW Flow, lb/hr: 182,483
% Design Capacity: 92.1

TEST NO.	19				
DATE	5-12-78				
COAL	Eastern	Low Fuse			
DESCRIPTION	Bu. Rear	O.F.A			
TIME OF READING	14:15	15:05	15:14	16:40	
West Coal Counter x 400 lb	95504	95524	95548	95558	
East Coal Counter x 400 lb	94098	94116	94134	94148	
Stm Flow Integrator x 350 lb	940716	941230	941744	941956	
FW Flow Integrator x 350 lb	64500	64975	65523	65760	
Excess Oxygen, %	7.0	7.0	7.0	7.1	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.2		
FD Fan Outlet Press, "H_2O	2.8	2.5	2.6		
Air Inlet Air Heater, "H_2O	2.0	1.9	2.0		
Air Outlet Air Heater, "H_2O	2.0	1.8	2.0		
Stoker Inlet Pressure, "H_2O	1.3	1.2	1.3		
Boiler Out. Pressure, "H_2O	-.7	-.6	-.6		
Dust Collector Out Pressure, "H_2O	-2.1	-2.0	-2.0		
Economizer Out Pressure, "H_2O	-4.0	-4.0	-4.0		
Air Heater Out Pressure, "H_2O	-5.0	-4.8	-4.8		
Fan Out Pressure, "H_2O	8.0	8.1	8.1		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	24	24	24		

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	910	910		
Steam Pressure Header, psig	850	880	875		
Steam Pressure Drum, psig	900	900	897		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	165	165	165		
Air Flow, % (blue)	55	54	54		
FW Flow, lb/hr x 1000 (red)	185	180	175		
SH Out Temp, °F (red)	845	850	840		
AH Out Temp, °F (blue)	720	715	715		
Steam Pressure, psig (red)	860	850	860		
TEMP RECORDER					
1-Grate Thermocouple, °F	540	545	515		
2-Grate Thermocouple, °F	570	590	602		
3-Grate Thermocouple, °F	600	510	545		
4-Grate Thermocouple, °F	605	630	660		
5-Grate Thermocouple, °F	650	610	685		
6-Grate Thermocouple, °F	545	570	540		
9-Flue Gas Boiler Out, °F	122	122	125		
10-Flue Gas Economizer Out, °F	105	101	101		
11-Flue Gas Air Heater Out, °F	135	108	140		
12-Stm Coil Air Heater In, °F	95	95	95		
13-Air Heater Air Out, °F	100	100	100		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	31	31	31		
Feedwater	50	51	50		
Attemperator	95	95	93		
SF/AF Ratio	55	55	52		
FD Damper	90	90	90		
ID Damper	51	51	51		
Overfire Air	66	67	67		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	119	119	119		
ID Fan Amps	26	25	26		
OFA Fan Amps	101	101	102		
STOKER (west/east)					
Front Upper OFA Press "H_2O	2.0/2.0	2.0/2.2	2.0/2.2		
Front Lower OFA Press "H_2O	2.5/2.0	2.0/2.0	2.0/2.0		
Rear Upper OFA Press "H_2O	23.0/22.0	22.0/21.5	22.5/22.0		
Rear Lower OFA Press "H_2O	17.0/18.0	17.0/18.0	17.0/18.0		
Blr Hopper Reinj. Press "H_2O	19.5/20.0	17.5/19.5	19.5/20.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	16.0/15.5	15.7/15.2	15.8/15.5		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.0/5.6	5.6/5.6	5.0/5.2		
Ash Bed Thickness	3"	3"	3"		
Clinkers	OK	OK	OK		
OFA Fan Static Pressure "H_2O					

KVB

NOTES

TEST NO: Set D.F.A with gage 15-20 in back and 5-7 in front gage broke & test measurements made with slack tape measure

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 7,221
Stm Flow, lb/hr: 100,909
FW Flow, lb/hr: 123,684
% Design Capacity: 55.3

TEST NO.	20				
DATE	5/13/78				
COAL	Eastern	Low Fusion			
DESCRIPTION	100 klb/hr	High balance air		normal	O_2
TIME OF READING	9:10	10:13	11:11	11:44	
West Coal Counter x 400 lb	98814	98830	98844	98853	
East Coal Counter x 400 lb	94390	94404	94418	94423	
Stm Flow Integrator x 350 lb	947368	947666	947945	948108	
[illegible] Flow Integrator x 350 lb	72072	72438	72782	7297	
Excess Oxygen, %	9.2	9.3	9.3	9.1	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.1	-0.2		
FD Fan Outlet Press, "H_2O	.6	.6	.7		
Air Inlet Air Heater, "H_2O	.3	.4	.5		
Air Outlet Air Heater, "H_2O	.5	.5	.4		
Stoker Inlet Pressure, "H_2O	.2	.4	.4		
Boiler Out. Pressure, "H_2O	-.3	-.3	-.3		
Dust Collector Out Pressure, "H_2O	-1.2	-1.0	-1.3		
Economizer Out Pressure, "H_2O	-3.2	-2.3	-2.6		
Air Heater Out Pressure, "H_2O	-3.0	-2.8	-3.0		
[illegible] Fan Out Pressure, "H_2O	8.6	8.7	8.5		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	20	20	20		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	890	870	890		
Steam Pressure Header, psig	870	870	890		
Steam Pressure Drum, psig	890	880	880		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	100	100	100		
Air Flow, % (blue)	30	30	30		
FW Flow, lb/hr x 1000 (red)	130	125	122		
SH Out Temp, °F (red)	775	780	780		
AH Out Temp, °F (blue)	680	690	700		
Steam Pressure, psig (red)	860	855	850		
TEMP RECORDER					
1-Grate Thermocouple, °F	820	810	808		
2-Grate Thermocouple, °F	865	912	890		
3-Grate Thermocouple, °F	990	840	790		
4-Grate Thermocouple, °F	965	850	855		
5-Grate Thermocouple, °F	805	900	810		
6-Grate Thermocouple, °F	765	785	730		
9-Flue Gas Boiler Out, °F	123	123	127		
10-Flue Gas Economizer Out, °F	105	105	110		
11-Flue Gas Air Heater Out, °F	90	94	95		
12-Stm Coil Air Heater In, °F	90	95	95		
13-Air Heater Air Out, °F	100	104	105		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	21	24	22		
Feedwater	50	50	50		
Attemperator	66	67	69		
SF/AF Ratio	28	28	29		
FD Damper	90	90	90		
ID Damper	51	51	51		
Overfire Air	80	80	80		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	108	109	109		
ID Fan Amps	23	23	24		
OFA Fan Amps	120	119	119		
STOKER (west/east)					
Front Upper OFA Press "H_2O	16.0/16.0	16.0/16.0	16.0/16.0		
Front Lower OFA Press "H_2O	16.0/16.0	17.0/16.5	16.0/16.0		
Rear Upper OFA Press "H_2O	17.5/17.5	17.5/17.5	17.5/17.5		
Rear Lower OFA Press "H_2O	15.0/15.0	14.5/15.0	14.5/14.5		
Blr Hopper Reinj. Press "H_2O	17.5/17.5	17.5/17.5	18.0/17.5		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	14.0/14.0	14.0/14.5	14.0/15.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.6/5.6	5.6/5.6	5.6/5.6		
Ash Bed Thickness	1½-2"	1½"-3" [illegible] 3"			
Clinkers	ok	ok			
OFA Fan Static Pressure "H_2O	25.0"				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: [illegible]
Stm Flow, lb/hr: [illegible]
FW Flow, lb/hr: [illegible]
% Design Capacity: [illegible]

TEST NO.	21		22		
DATE	5/16/78				
COAL	Western				
DESCRIPTION	Gaseous				
	High OEA		Low OEA		
TIME OF READING	11:41		15:03	16:50	
West Coal Counter x 400 lb	100368		100468	100525	
East Coal Counter x 400 lb	95833		95929	95983	
Stm Flow Integrator x 350 lb	973417		974763	975517	
Fw Flow Integrator x 350 lb	101560		103047	103877	
Excess Oxygen, %	8.4	7.5 6.8	7.0	6.0 8.0	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2		-0.1		
FD Fan Outlet Press, "H_2O	2.0		2.0		
Air Inlet Air Heater, "H_2O	1.5		1.5		
Air Outlet Air Heater, "H_2O	1.5		1.6		
Stoker Inlet Pressure, "H_2O	1.0		1.1		
Boiler Out. Pressure, "H_2O	-.6		-.4		
Dust Collector Out Pressure, "H_2O	-2.0		-1.6		
Economizer Out Pressure, "H_2O	-3.4		-3.0		
Air Heater Out Pressure, "H_2O	-4.8		-3.6		
Fan Out Pressure, "H_2O	8.1		8.5		
Precip Out. Pressure, "H_2O	0		0		
Overfire Air Press, "H_2O	19		11		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	895	900			
Steam Pressure Header, psig	870	880			
Steam Pressure Drum, psig	880	890			
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	135		138		
Air Flow, % (blue)	46	39	44	38 52	
FW Flow, lb/hr x 1000 (red)	150		150		
SH Out Temp, °F (red)	850		850		
AH Out Temp, °F (blue)	730		730		
Steam Pressure, psig (red)	860		855		
TEMP RECORDER					
1-Grate Thermocouple, °F	610	700	630	700	
2-Grate Thermocouple, °F	to				
3-Grate Thermocouple, °F		to	to	to	
4-Grate Thermocouple, °F					
5-Grate Thermocouple, °F	720	820	780	800	
6-Grate Thermocouple, °F					
9-Flue Gas Boiler Out, °F	125		125		
10-Flue Gas Economizer Out, °F	105		105		
11-Flue Gas Air Heater Out, °F	95		95		
12-Stm Coil Air Heater In, °F	95		95		
13-Air Heater Air Out, °F	95		95		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	44		46	54	
Feedwater	50		50		
Attemperator	90		90		
SF/AF Ratio	46	40	45	40 52	
FD Damper	90		90		
ID Damper	51		51		
Overfire Air	80		50	50	
FD Set Point	60		60		
AMPS					
FD Fan Amps	115		115		
ID Fan Amps	25		24		
OFA Fan Amps	120		95		
STOKER (west/east)					
Front Upper OFA Press "H_2O	16.0/16.0		5.5/6.0		
Front Lower OFA Press "H_2O	16.0/18.0		5.0/5.0		
Rear Upper OFA Press "H_2O	17.0/18.0		5.0/5.0		
Rear Lower OFA Press "H_2O	14.5/18.0		5.0/5.0		
Blr Hopper Reinj. Press "H_2O	18.5/18.0		12.5/13.0		
Blr Hopper Reinj. yes/no	yes		yes		
Mech Hopper Reinj. Press "H_2O	14.5/14.0		10.5/10.0		
Mech Hopper Reinj. yes/no					
Relative Grate Speed west/east		5.6/5.6			
Ash Bed Thickness					
Clinkers					
OFA Fan Static Pressure "H_2O					

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 29,829
Stm Flow, lb/hr: 181,700
FW Flow, lb/hr: 196,600
% Design Capacity: 99.6

TEST NO.	23				
DATE	5/17/78				
COAL	Western				
DESCRIPTION	Max load	high balanced O.t.a.			
TIME OF READING	9:12	10:17	11:16	12:42	
West Coal Counter x 400 lb	100978	101020	101057	101111	
East Coal Counter x 400 lb	96351	96422	96457	96509	
Stm Flow Integrator x 350 lb	981431	982004	982513	983248	
FW Flow Integrator x 350 lb	110461	111078	111631	112427	
Excess Oxygen, %	7.1	6.9	7.0	12:15 ↓ 7.2	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.2	-0.2	
FD Fan Outlet Press, "H_2O	2.4	3.1	3.2	3.0	
Air Inlet Air Heater, "H_2O	2.1	2.4	2.4	2.3	
Air Outlet Air Heater, "H_2O	2.0	2.2	2.3	2.2	
Stoker Inlet Pressure, "H_2O	1.5	1.6	1.6	1.6	
Boiler Out. Pressure, "H_2O	-0.8	-0.8	-0.8	-0.7	
Dust Collector Out Pressure, "H_2O	-2.8	-2.8	-2.7	-2.6	
Economizer Out Pressure, "H_2O	-5.2	-5.4	-5.1	-5.0	
Air Heater Out Pressure, "H_2O	-6.0+	-6.0+	-6.0+	-6.0+	
Fan Out Pressure, "H_2O	6.9	6.2	6.0	7.0	
Precip Out. Pressure, "H_2O	0	0	0	0	
Overfire Air Press, "H_2O	23.5	23.5	22	22	

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	920	920	925	920	
Steam Pressure Header, psig	875	880	880	880	
Steam Pressure Drum, psig	900	905	705	900	
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	190	185	180	
Air Flow, % (blue)	56	58	57	56	
FW Flow, lb/hr x 1000 (red)	200	210	190	190	
SH Out Temp, °F (red)	840	870	870	840	
AH Out Temp, °F (blue)	740	750	760	755	
Steam Pressure, psig (red)	860	865	860	860	
TEMP RECORDER					
1-Grate Thermocouple, °F	610	620	605	600	
2-Grate Thermocouple, °F	650	635	600	625	
3-Grate Thermocouple, °F	610	645	645	635	
4-Grate Thermocouple, °F	645	645	665	585	
5-Grate Thermocouple, °F	645	705	640	630	
6-Grate Thermocouple, °F	635	630	650	625	
9-Flue Gas Boiler Out, °F	120	125	125	130	
10-Flue Gas Economizer Out, °F	105	110	112	115	
11-Flue Gas Air Heater Out, °F	100	95	95	95	
12-Stm Coil Air Heater In, °F	90	90	92	93	
13-Air Heater Air Out, °F	95	95	97	100	

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	20	20	20	18	
Feedwater	50	50	50	50	
Attemperator	100+	100+	100+	98	
SF/AF Ratio	55	55	54	55	
FD Damper	90	90	90	90	
ID Damper	51	51	51	51	
Overfire Air	95	90	88	86	
FD Set Point	60	60	60	60	
AMPS					
FD Fan Amps	120	117	118	120	
ID Fan Amps	26	27	27	26	
OFA Fan Amps	124	123	122	121	
STOKER (west/east)					
Front Upper OFA Press "H_2O	18.0/18.0	17.5/18.0	17.5/18.0	17.5/17.5	
Front Lower OFA Press "H_2O	19.0/18.5	19.0/18.0	17.5/17.5	17.5/17.0	
Rear Upper OFA Press "H_2O	20.0/20.0	20.0/20.0	20.0/19.0	19.0/19.0	
Rear Lower OFA Press "H_2O	16.0/17.0	16.0/17.0	16.0/16.0	16.0/16.0	
Blr Hopper Reinj. Press "H_2O	20.0/19.0	18.5/15.5	18.5/18.5	18.5/18.5	
Blr Hopper Reinj. yes/no	yes	yes	yes	yes	
Mech Hopper Reinj. Press "H_2O	16.0/15.5	16.0/15.5	15.5/15.5	16.0/16.0	
Mech Hopper Reinj. yes/no	yes	yes	yes	yes	
Relative Grate Speed west/east	5.6/5.6	5.6/5.6	5.6/5.6	5.6/5.6	
Ash Bed Thickness	2"-3"	2"-3"	2"-3"	2"-3"	
Clinkers	ok	ok	ok	ok	
OFA Fan Static Pressure "H_2O	25.0				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 28,995
Stm Flow, lb/hr: 179,498
FW Flow, lb/hr: 191,471
% Design Capacity: 98.4

TEST NO.	24				
DATE	5-18-78				
COAL	Western				
DESCRIPTION	low balanced	O.F.A.	Max load		
TIME OF READING	9:42	10:52	12:06	13:27	
West Coal Counter x 400 lb	101699	101742	101788	101838	
East Coal Counter x 400 lb	97043	97083	97128	97171	
Stm Flow Integrator x 350 lb	991085	991674	992318	992974	
Fw Flow Integrator x 350 lb	121196	121825	122510	123211	
Excess Oxygen, %	7.0	6.9	7.0	7.1	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.2	-0.1		
FD Fan Outlet Press, "H_2O	4.0	4.2	4.1		
Air Inlet Air Heater, "H_2O	3.0	3.1	3.1		
Air Outlet Air Heater, "H_2O	3.0	3.0	3.0		
Stoker Inlet Pressure, "H_2O	2.0	2.1	2.0		
Boiler Out. Pressure, "H_2O	-0.8	-0.7	-0.8		
Dust Collector Out Pressure, "H_2O	-2.7	-2.7	-2.7		
Economizer Out Pressure, "H_2O	-4.6	-5.2	-5.0		
Air Heater Out Pressure, "H_2O	-6.04	-6.04	-6.04		
Fan Out Pressure, "H_2O	7.0	6.9	6.9		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	27	26.5	26.5		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	915	912		
Steam Pressure Header, psig	875	875	875		
Steam Pressure Drum, psig	900	900	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	175	180	170		
Air Flow, % (blue)	66	67	66		
FW Flow, lb/hr x 1000 (red)	190	190	190		
SH Out Temp, °F (red)	915	900	900		
AH Out Temp, °F (blue)	765	740	740		
Steam Pressure, psig (red)	850	860	855		
TEMP RECORDER					
1-Grate Thermocouple, °F	590	566	577		
2-Grate Thermocouple, °F	600	555	554		
3-Grate Thermocouple, °F	610	635	542		
4-Grate Thermocouple, °F	600	626	597		
5-Grate Thermocouple, °F	597	640	625		
6-Grate Thermocouple, °F	595	572	578		
9-Flue Gas Boiler Out, °F	127	127	136		
10-Flue Gas Economizer Out, °F	116	117	117		
11-Flue Gas Air Heater Out, °F	102	102	107		
12-Stm Coil Air Heater In, °F	94	95	100		
13-Air Heater Air Out, °F	100	95	104		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	13	16	19		
Feedwater	50	50	50		
Attemperator	100+	100+	100+		
SF/AF Ratio	66	66	66		
FD Damper	90	90	90		
ID Damper	51	51	51		
Overfire Air	66	66	67		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	125	125	125		
ID Fan Amps	26	26	26		
OFA Fan Amps	92	94	94		
STOKER (west/east)					
Front Upper OFA Press "H_2O	4.0/4.5	4.5/4.0	4.5/4.5		
Front Lower OFA Press "H_2O	5.0/5.0	5.0/4.0	5.0/5.0		
Rear Upper OFA Press "H_2O	5.0/5.0	5.0/5.0	5.0/5.5		
Rear Lower OFA Press "H_2O	6.0/6.0	5.5/5.0	6.0/5.0		
Blr Hopper Reinj. Press "H_2O	21.0/21.0	20.0/20.0	20.5/20.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	17.0/17.0	17.0/16.5	17.0/17.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.6/5.6	5.6/5.6	5.6/5.6		
Ash Bed Thickness	2"-3"	2"-3"	2"-3"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O	28.0				

KVB

NOTES

TEST NO: 24. Steam temp got as high as 930°F after conditions changed to test conditions.

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 23,721
Stm Flow, lb/hr: 124,727
FW Flow, lb/hr: 156,401
% Design Capacity: 78.2

TEST NO.	25				
DATE	5-19-78				
COAL	Western				
DESCRIPTION	140 klb/hr				
	Part-blr. + DC out				
TIME OF READING	10:28	11:43	12:46	13:20	
West Coal Counter x 400 lb	102352	102390	102420	102438	
East Coal Counter x 400 lb	97686	97722	97753	97770	
Stm Flow Integrator x 350 lb	365	875	1240	1534	
Fw Flow Integrator x 350 lb	131518	132077	132532	132799	
Excess Oxygen, %	6.9	7.0	7.0		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.2	-0.1	-0.1		
FD Fan Outlet Press, "H_2O	1.5	1.5	1.6		
Air Inlet Air Heater, "H_2O	1.1	1.1	1.1		
Air Outlet Air Heater, "H_2O	1.1	1.1	1.2		
Stoker Inlet Pressure, "H_2O	.9	.7	.8		
Boiler Out. Pressure, "H_2O	-.6	-.5	-.5		
Dust Collector Out Pressure, "H_2O	-1.8	-1.6	-1.6		
Economizer Out Pressure, "H_2O	-3.4	-3.2	-3.3		
Air Heater Out Pressure, "H_2O	-4.1	-4.0	-4.0		
Fan Out Pressure, "H_2O	8.5	8.6	8.6		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	16	17.5	17.5		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	904	910	907		
Steam Pressure Header, psig	870	885	880		
Steam Pressure Drum, psig	890	900	891		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	145	140	143		
Air Flow, % (blue)	42	46	42		
FW Flow, lb/hr x 1000 (red)	150	155	140		
SH Out Temp, °F (red)	855	850	860		
AH Out Temp, °F (blue)	730	730	730		
Steam Pressure, psig (red)	858	850	860		
TEMP RECORDER					
1-Grate Thermocouple, °F	780	760	745		
2-Grate Thermocouple, °F	843	765	795		
3-Grate Thermocouple, °F	775	695	788		
4-Grate Thermocouple, °F	792	742	803		
5-Grate Thermocouple, °F	740	765	750		
6-Grate Thermocouple, °F	745	775	744		
9-Flue Gas Boiler Out, °F	130	130	130		
10-Flue Gas Economizer Out, °F	113	113	113		
11-Flue Gas Air Heater Out, °F	96	101	102		
12-Stm Coil Air Heater In, °F	101	103	104		
13-Air Heater Air Out, °F	100	97	99		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	25	21	20		
Feedwater	50	56	56		
Attemperator	84	81	83		
SF/AF Ratio	40	40	42		
FD Damper	85	85	85		
ID Damper	46	45	46		
Overfire Air	71	71	72		
FD Set Point	60	60	59		
AMPS					
FD Fan Amps	111	111	111		
ID Fan Amps	24	24	24		
OFA Fan Amps	115	115	114		
STOKER (west/east)					
Front Upper OFA Press "H_2O	14.0/14.0	14.0/14.0	14.0/14.0		
Front Lower OFA Press "H_2O	14.5/14.0	14.0/14.0	14.5/14.0		
Rear Upper OFA Press "H_2O	15.5/16.0	16.0/15.5	16.0/15.5		
Rear Lower OFA Press "H_2O	12.0/13.0	12.5/13.0	12.5/13.0		
Blr Hopper Reinj. Press "H_2O	17.0/16.5	16.5/17.0	17.0/17.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	14.0/13.5	13.5/12.5	14.0/13.5		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.7/5.7	5.7/5.7	5.7/5.7		
Ash Bed Thickness	3"	5" in middle	5"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O	26				

KVB

Coal Flow, lb/hr: 29,481
Stm Flow, lb/hr: 180,963
FW Flow, lb/hr: 194,574
% Design Capacity: 99.2

CONTROL ROOM DATA
TEST SITE C

TEST NO.	26				
DATE	5-23-79				
COAL	Western				
DESCRIPTION	Bias upper O.F.A.				
TIME OF READING	11:57	14:12	16:15	16:39	
West Coal Counter x 400 lb	104678	104726	104764	104780	
East Coal Counter x 400 lb	99995	100040	100076	100092	
Stm Flow Integrator x 350 lb	33680	34328	34859	35076	
[illegible] Flow Integrator x 350 lb	168950	169639	170215	170451	
Excess Oxygen, %	7.1	7.0	6.8		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.1	-0.1		
FD Fan Outlet Press, "H_2O	4.0	3.7	3.4		
Air Inlet Air Heater, "H_2O	3.0	2.9	2.9		
Air Outlet Air Heater, "H_2O	2.8	2.7	2.7		
Stoker Inlet Pressure, "H_2O	1.9	1.9	1.9		
Boiler Out. Pressure, "H_2O	-0.7	-0.7	-0.8		
Dust Collector Out Pressure, "H_2O	-2.6	-2.5	-2.6		
Economizer Out Pressure, "H_2O	-5.0	-4.8	-5.0		
Air Heater Out Pressure, "H_2O	-6.0 +	-6.0 +	-6.0		
ID Fan Out Pressure, "H_2O	7.0	7.0	7.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	20.0	20.0	20.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	902	910	915		
Steam Pressure Header, psig	860	880	880		
Steam Pressure Drum, psig	885	900	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	177	182		
Air Flow, % (blue)	64	63	64		
FW Flow, lb/hr x 1000 (red)	190	197	190		
SH Out Temp, °F (red)	900	905	910		
AH Out Temp, °F (blue)	755	755	750		
Steam Pressure, psig (red)	850	855	850		
TEMP RECORDER					
1-Grate Thermocouple, °F	605	615	638		
2-Grate Thermocouple, °F	655	651	675		
3-Grate Thermocouple, °F	632	647	635		
4-Grate Thermocouple, °F	640	644	650		
5-Grate Thermocouple, °F	632	692	696		
6-Grate Thermocouple, °F	616	637	617		
9-Flue Gas Boiler Out, °F	127	125	125		
10-Flue Gas Economizer Out, °F	102	105	105		
11-Flue Gas Air Heater Out, °F	155	150	147		
12-Stm Coil Air Heater In, °F	106	105	106		
13-Air Heater Air Out, °F	96	96	96		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	25	24	26		
Feedwater	50	50	50		
Attemperator	+100	+100	+100		
SF/AF Ratio	65	65	65		
FD Damper	85	85	85		
ID Damper	44	45	45		
Overfire Air	60	60	60		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	125	125	125		
ID Fan Amps	27	27	26		
OFA Fan Amps	99	98	98		
STOKER (west/east)					
Front Upper OFA Press "H_2O	17.5/18.0	17.0/17.5	17.5/17.5		
Front Lower OFA Press "H_2O	3.0/4.5	3.5/3.5	3.5/3.5		
Rear Upper OFA Press "H_2O	18.0/18.0	18.0/18.0	18.0/18.0		
Rear Lower OFA Press "H_2O	5.0/3.0	5.0/3.0	5.0/3.0		
Blr Hopper Reinj. Press "H_2O	17.5/18.0	17.5/18.0	17.5/18.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	15.0/14.5	14.5/14.0	14.5/14.5		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	6.0/5.7	6.0/5.7	6.0/5.7		
Ash Bed Thickness	2'-3"	2"-3"	2"-3"		
Clinkers	Ok	ok	ok		
OFA Fan Static Pressure "H_2O	29.5				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 26,667
Stm Flow, lb/hr: 182,982
FW Flow, lb/hr: 194,281
% Design Capacity: 100.3

TEST NO.	27				
DATE	5/24/78				
COAL	Western				
DESCRIPTION	Bias lower O.F.A.				
TIME OF READING	11:19	12:28	13:34	14:10	
West Coal Counter x 400 lb	105330	105371	105409	105426	
East Coal Counter x 400 lb	100586	100626	100663	100680	
Stm Flow Integrator x 350 lb	42438	43042	43627	43928	
FW Flow Integrator x 350 lb	178551	179188	179811	180133	
Excess Oxygen, %	7.1	7.1	7.0		
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.1	-0.2		
FD Fan Outlet Press, "H_2O	3.2	3.3	3.2		
Air Inlet Air Heater, "H_2O	2.5	2.5	2.6		
Air Outlet Air Heater, "H_2O	2.4	2.4	2.4		
Stoker Inlet Pressure, "H_2O	1.7	1.7	1.6		
Boiler Out. Pressure, "H_2O	-0.7	-0.7	-0.6		
Dust Collector Out Pressure, "H_2O	-2.6	-2.6	-2.4		
Economizer Out Pressure, "H_2O	-5.0	-5.0	-4.3		
Air Heater Out Pressure, "H_2O	-6.0+	-6.0+	-5.4		
Fan Out Pressure, "H_2O	7.0	7.0	7.1		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	21.0	21.0	20.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	915	910	910		
Steam Pressure Header, psig	875	870	870		
Steam Pressure Drum, psig	900	890	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	180	185		
Air Flow, % (blue)	59	58	60		
FW Flow, lb/hr x 1000 (red)	190	190	200		
SH Out Temp, °F (red)	900	900	875		
AH Out Temp, °F (blue)	765	760	751		
Steam Pressure, psig (red)	855	850	845		
TEMP RECORDER					
1-Grate Thermocouple, °F	630	678	665		
2-Grate Thermocouple, °F	675	704	685		
3-Grate Thermocouple, °F	665	697	645		
4-Grate Thermocouple, °F	620	655	695		
5-Grate Thermocouple, °F	662	665	750		
6-Grate Thermocouple, °F	679	658	650		
9-Flue Gas Boiler Out, °F	135	135	137		
10-Flue Gas Economizer Out, °F	110	107	110		
11-Flue Gas Air Heater Out, °F	125	127	125		
12-Stm Coil Air Heater In, °F	113	116	118		
13-Air Heater Air Out, °F	104	105	105		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	25	33	27		
Feedwater	50	50	50		
Attemperator	100+	100+	100+		
SF/AF Ratio	59	56	64		
FD Damper	85	85	85		
ID Damper	44	45	45		
Overfire Air	79	79	56		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	121	120	123		
ID Fan Amps	26	26	26		
OFA Fan Amps	113	113	110		
STOKER (west/east)					
Front Upper OFA Press "H_2O	4.5/4.5	4.5/4.5	4.5/4.5		
Front Lower OFA Press "H_2O	17.0/17.0	16.5/17.0	16.5/16.5		
Rear Upper OFA Press "H_2O	4.0/5.0	4.0/5.0	4.0/4.5		
Rear Lower OFA Press "H_2O	16.0/16.0	15.0/16.0	15.0/16.0		
Blr Hopper Reinj. Press "H_2O	19.0/18.0	18.0/18.0	17.5/18.0		
Blr Hopper Reinj. yes/no	Yes	Yes	Yes		
Mech Hopper Reinj. Press "H_2O	15.5/15.0	15.0/15.5	15.0/14.5		
Mech Hopper Reinj. yes/no	Yes	Yes	Yes		
Relative Grate Speed west/east	6.0/5.7	6.0/5.7	6.0/5.7		
Ash Bed Thickness	3"	3"	3"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O	27.0				

KVB

NOTES

TEST NO: 37 At 13:00 the load shot up to 200,000 and went unnoticed for about 20 minutes. The operator brought the load back down to 180,000, but had a hard time keeping it there. He seems to think that some custom coal got put in the Bunker by

TEST NO: mistake, but the coal handler says no.

In bringing the load back 180,000 the O.F.A. dropped to 13" so it was put on hand and raised to 20" H_2O.

The last coal sample was taken about 13:00

TEST NO: so another was taken at 13:45

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 31,360
Stm Flow, lb/hr: 180 880
FW Flow, lb/hr: 193 200
% Design Capacity: 99.1

TEST NO.	28				
DATE	5-25-78				
COAL	Western				
DESCRIPTION	Bias front	OFA.			
TIME OF READING	11:00	12:07	13:12	13:30	
West Coal Counter x 400 lb	106117	106161	106206	106220	
East Coal Counter x 400 lb	101313	101353	101394	101406	
Stm Flow Integrator x 350 lb	52523	53078	53648	53815	
F.W. Flow Integrator x 350 lb	189575	190171	190779	190955	
Excess Oxygen, %	7.3	7.2	7.3	7.2	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.1	-0.1		
FD Fan Outlet Press, "H_2O	4.0	4.0	4.0		
Air Inlet Air Heater, "H_2O	3.0	3.0	3.1		
Air Outlet Air Heater, "H_2O	2.9	2.9	3.0		
Stoker Inlet Pressure, "H_2O	2.0	2.0	2.0		
Boiler Out. Pressure, "H_2O	-0.7	-0.9	-0.9		
Dust Collector Out Pressure, "H_2O	-2.8	-2.9	-3.0		
Economizer Out Pressure, "H_2O	-5.3	-5.5	-5.6		
Air Heater Out Pressure, "H_2O	-6.0+	-6.0+	-6.0+		
Fan Out Pressure, "H_2O	6.2	6.0	6.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	20.0	20.0	20.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	912	910		
Steam Pressure Header, psig	865	865	865		
Steam Pressure Drum, psig	892	897	895		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	180	180		
Air Flow, % (blue)	64	66	66		
FW Flow, lb/hr x 1000 (red)	190	190	190		
SH Out Temp, °F (red)	900	900	910		
AH Out Temp, °F (blue)	770	770	775		
Steam Pressure, psig (red)	850	845	850		
TEMP RECORDER					
1-Grate Thermocouple, °F	560	597	586		
2-Grate Thermocouple, °F	635	627	605		
3-Grate Thermocouple, °F	637	606	597		
4-Grate Thermocouple, °F	655	673	592		
5-Grate Thermocouple, °F	640	640	612		
6-Grate Thermocouple, °F	585	594	610		
9-Flue Gas Boiler Out, °F	136	134	140		
10-Flue Gas Economizer Out, °F	108	107	110		
11-Flue Gas Air Heater Out, °F	107	114	120		
12-Stm Coil Air Heater In, °F	115	116	115		
13-Air Heater Air Out, °F	106	106	109		

Sheet 3 of 4

KVB

TEST NO.								
CONTROLS								
Plant Master	25		26		28			
Feedwater	50		57		50			
Attemperator	100+		100+		100+			
SF/AF Ratio	65		65		66			
FD Damper	85		85		85			
ID Damper	45		45		45			
Overfire Air	75		75		75			
FD Set Point	49		49		50			
AMPS								
FD Fan Amps	124		124		124			
ID Fan Amps	27		27		27			
OFA Fan Amps	106		105		105			
STOKER (west/east)								
Front Upper OFA Press "H_2O	16.0	16.0	16.0	16.0	16.0	16.0		
Front Lower OFA Press "H_2O	16.0	16.0	16.0	16.0	16.0	16.0		
Rear Upper OFA Press "H_2O	5.0	6.0	5.0	6.0	5.0	5.0		
Rear Lower OFA Press "H_2O	4.0	5.0	4.0	4.5	4.0	4.5		
Blr Hopper Reinj. Press "H_2O	18.0	18.0	18.0	18.0	18.0	18.0		
Blr Hopper Reinj. yes/no	Yes		yes		yes			
Mech Hopper Reinj. Press "H_2O	15.0	15.0	15.0	15.0	15.0	15.0		
Mech Hopper Reinj. yes/no	Yes		Yes		Yes			
Relative Grate Speed west/east	6.0	5.7	6.0	5.7	6.0	5.7		
Ash Bed Thickness	4"-5"		4"-5"		4"-5"			
Clinkers	OK		2-4		2-4			
OFA Fan Static Pressure "H_2O	27.0							

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 30,268
Stm Flow, lb/hr: 182.045
FW Flow, lb/hr: 191 943
% Design Capacity: 99.8

TEST NO.	29				
DATE	5-26-78				
COAL	Western				
DESCRIPTION	Bias Rear				
	O.F.A.				
TIME OF READING	9:13	10:15	11:23	11:50	
West Coal Counter x 400 lb	106831	106871	106915	106934	
East Coal Counter x 400 lb	101914	101952	101992	102009	
Stm Flow Integrator x 350 lb	61494	62036	62612	62855	
FW Flow Integrator x 350 lb	199430	200002	200606	200865	
Excess Oxygen, %	6.9	7.0	6.8	7.0	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.1	-0.1	-0.1		
FD Fan Outlet Press, "H_2O	4.0	4.1	4.4		
Air Inlet Air Heater, "H_2O	3.0	3.2	3.4		
Air Outlet Air Heater, "H_2O	2.8	3.0	3.3		
Stoker Inlet Pressure, "H_2O	2.0	2.1	2.4		
Boiler Out. Pressure, "H_2O	-.8	-.8	-.8		
Dust Collector Out Pressure, "H_2O	-2.6	-2.8	-2.9		
Economizer Out Pressure, "H_2O	-5.0	-5.3	-5.5		
Air Heater Out Pressure, "H_2O	-6.01	-6.01	-6.01		
Fan Out Pressure, "H_2O	7.0	6.7	6.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	20.0	20.0	20.5		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	880	912		
Steam Pressure Header, psig	880	850	880		
Steam Pressure Drum, psig	898	865	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	180	185		
Air Flow, % (blue)	65	66	68		
FW Flow, lb/hr x 1000 (red)	190	190	195		
SH Out Temp, °F (red)	900	900	900		
AH Out Temp, °F (blue)	750	740	745		
Steam Pressure, psig (red)	850	820	860		
TEMP RECORDER					
1-Grate Thermocouple, °F	612	590	565		
2-Grate Thermocouple, °F	660	585	607		
3-Grate Thermocouple, °F	624	625	635		
4-Grate Thermocouple, °F	675	634	645		
5-Grate Thermocouple, °F	680	626	650		
6-Grate Thermocouple, °F	533	606	656		
9-Flue Gas Boiler Out, °F	134	137	138		
10-Flue Gas Economizer Out, °F	109	115	115		
11-Flue Gas Air Heater Out, °F	105	109	111		
12-Stm Coil Air Heater In, °F	115	116	118		
13-Air Heater Air Out, °F	104	107	110		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	30	44	35		
Feedwater	50	50	50		
Attemperator	100+	100+	100+		
SF/AF Ratio	65	65	69		
FD Damper	85	85	85		
ID Damper	44	44	44		
Overfire Air	62	65	65		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	124	124	124		
ID Fan Amps	26	27	27		
OFA Fan Amps	100	100	101		
STOKER (west/east)					
Front Upper OFA Press "H_2O	4.5/4.0	5.0/5.0	5.0/4.5		
Front Lower OFA Press "H_2O	4.0/4.0	4.0/4.5	4.0/4.5		
Rear Upper OFA Press "H_2O	17.5/18.0	18.5/18.5	19.0/18.5		
Rear Lower OFA Press "H_2O	15.0/15.0	15.5/15.5	15.0/15.5		
Blr Hopper Reinj. Press "H_2O	17.5/17.5	18.0/18.5	18.0/18.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	15.0/15.0	15.0/15.0	15.0/15.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	6.0/5.7	6.0/5.7	6.0/5.7		
Ash Bed Thickness	4"	4"	4"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O	28.5				

KVB

CONTROL ROOM DATA
TEST SITE C

	30.	31
Coal Flow, lb/hr:	17,600	16,774
Stm Flow, lb/hr:	106300	100710
FW Flow, lb/hr:	117900	114,484
% Design Capacity:	58.5	53.2

TEST NO.	30		31		
DATE	5/29/79				
COAL	Western				
DESCRIPTION	Max OFA		Min OFA		
	Vary O_2		Vary O_2		
TIME OF READING	11:20	13:05	13:39	15:12	
West Coal Counter x 400 lb	108957	108996	109009	109042	
East Coal Counter x 400 lb	703739	103777	103790	103822	
Stm Flow Integrator x 350 lb	88303	88837	89007	89453	
Fw Flow Integrator x 350 lb	229280	229867	230073	230580	
Excess Oxygen, %	9.5	8.0	7.0	8.0 9.0	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.4		-.2		
FD Fan Outlet Press, "H_2O	.4		.5		
Air Inlet Air Heater, "H_2O	.5		.25		
Air Outlet Air Heater, "H_2O	.5		.4		
Stoker Inlet Pressure, "H_2O	.3		.2		
Boiler Out. Pressure, "H_2O	-.7		-.3		
Dust Collector Out Pressure, "H_2O	-1.9		-1.0		
Economizer Out Pressure, "H_2O	-2.3		-2.0		
Air Heater Out Pressure, "H_2O	-4.0		-2.3		
Fan Out Pressure, "H_2O	8.0		8.3		
Precip Out. Pressure, "H_2O	0		0		
Overfire Air Press, "H_2O	20.0		20.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	890		895		
Steam Pressure Header, psig	870		870		
Steam Pressure Drum, psig	880		885		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	100		100		
Air Flow, % (blue)	36		28		
FW Flow, lb/hr x 1000 (red)	120		105		
SH Out Temp, °F (red)	630		810		
AH Out Temp, °F (blue)	720		705		
Steam Pressure, psig (red)	850		850		
TEMP RECORDER					
1-Grate Thermocouple, °F	816	850	860		
2-Grate Thermocouple, °F	835	to	975		
3-Grate Thermocouple, °F	810	950	850		
4-Grate Thermocouple, °F	777	↓	915		
5-Grate Thermocouple, °F	835		900		
6-Grate Thermocouple, °F	764		905		
9-Flue Gas Boiler Out, °F	130		135		
10-Flue Gas Economizer Out, °F	105		110		
11-Flue Gas Air Heater Out, °F	98		110		
12-Stm Coil Air Heater In, °F	116		120		
13-Air Heater Air Out, °F	97		100		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	40	40	40	38/38	
Feedwater	50		50		
Attemperator	77		66		
SF/AF Ratio	37	30/	29	35/40	
FD Damper	85		85		
ID Damper	45		45		
Overfire Air	84		57		
FD Set Point	85		57		
AMPS					
FD Fan Amps	108		107		
ID Fan Amps	24		22		
OFA Fan Amps	116		93		
STOKER (west/east)					
Front Upper OFA Press "H_2O	16.0/16.0		5.0/5.0		
Front Lower OFA Press "H_2O	16.5/16.0		4.0/5.0		
Rear Upper OFA Press "H_2O	17.5/18.0		5.0/5.0		
Rear Lower OFA Press "H_2O	14.0/15.0		4.0/4.0		
Blr Hopper Reinj. Press "H_2O	17.5/17.0		17.0/17.0		
Blr Hopper Reinj. yes/no	yes		Yes		
Mech Hopper Reinj. Press "H_2O	14.0/14.0		13.0/13.0		
Mech Hopper Reinj. yes/no	Yes		Yes		
Relative Grate Speed west/east	6.0/6.0		6.0/6.0		
Ash Bed Thickness	2"-3"		2"-3"		
Clinkers	grate #4		ok		
OFA Fan Static Pressure "H_2O	25		28		

KVB

NOTES

TEST NO: 30 grate temps went up to 850 to 950 so the grate speed was slowed down 2 full turns. Operators couldn't lower air pressure 50% even though the SF/AF ratio went from about 30 to 20. The load then shot up to 200 klb/hr. Operators think that

TEST NO: because of low air there was a lot of unburned coal on the grate that suddenly ignited.

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

	32	33
Coal Flow, lb/hr:	28,861	29,037
Stm Flow, lb/hr:	174,676	175,778
FW Flow, lb/hr:	189,000	188,481
% Design Capacity:	95.7	96.3

TEST NO.	32		33		
DATE	5-30-78		5-30-78		
COAL	Western		Western		
DESCRIPTION	Max O.F.A.		Min. O.F.A.		
	Vary O_2		Vary O_2		
TIME OF READING	9:32	10:51	11:14	12:35	
West Coal Counter x 400 lb	109515	109563	109575	109625	
East Coal Counter x 400 lb	104273	104320	104333	104381	
Stm Flow Integrator x 350 lb	95869	96526	96703	97381	
[illegible] Flow Integrator x 350 lb	237766	238477	238668	239395	
Excess Oxygen, %	7.0	6.0 8.0	7.0	6.0 8.0	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.4		-.4		
FD Fan Outlet Press, "H_2O	2.6		3.5		
Air Inlet Air Heater, "H_2O	2.0		2.5		
Air Outlet Air Heater, "H_2O	1.8		2.4		
Stoker Inlet Pressure, "H_2O	1.2		1.6		
Boiler Out. Pressure, "H_2O	-1.0		-1.0		
Dust Collector Out Pressure, "H_2O	-2.8		-2.8		
Economizer Out Pressure, "H_2O	-5.2		-5.2		
Air Heater Out Pressure, "H_2O	-6.0		-6.0		
Fan Out Pressure, "H_2O	7.2		6.3		
Precip Out. Pressure, "H_2O	0		0		
Overfire Air Press, "H_2O	20.0		20.0		

Sheet 2 of 4

KVB

TEST NO.						
PRESSURE GAUGES						
Feedwater Pressure, psig	910			920		
Steam Pressure Header, psig	875			885		
Steam Pressure Drum, psig	898			907		
STRIP CHARTS						
Stm Flow, lb/hr x 1000 (red)	175	175	170	175	170	175
Air Flow, % (blue)	58	48	62	63	55	70
FW Flow, lb/hr x 1000 (red)	170			180		
SH Out Temp, °F (red)	880			915		
AH Out Temp, °F (blue)	745			760		
Steam Pressure, psig (red)	845			855		
TEMP RECORDER						
1-Grate Thermocouple, °F	622	690	710	610	600	650
2-Grate Thermocouple, °F	670			665		
3-Grate Thermocouple, °F	680	to	to	655	to	to
4-Grate Thermocouple, °F	660	840	850	685	700	780
5-Grate Thermocouple, °F	665	↓	↓	694	↓	↓
6-Grate Thermocouple, °F	640			635		
9-Flue Gas Boiler Out, °F	133			135		
10-Flue Gas Economizer Out, °F	107			107		
11-Flue Gas Air Heater Out, °F	115			116		
12-Stm Coil Air Heater In, °F	115			116		
13-Air Heater Air Out, °F	100			104		

Sheet 3 of 4

KVB

TEST NO.	32	32	33	33	
CONTROLS					
Plant Master	30	35 35	26	25 - 27	
Feedwater	50		50		
Attemperator	96		100		
SF/AF Ratio	52	48 60	64	55 70	
FD Damper	85		85		
ID Damper	45		45		
Overfire Air	85		55		
FD Set Point	55		55		
AMPS					
FD Fan Amps	115		120		
ID Fan Amps	26		26		
OFA Fan Amps	116		90		
STOKER (west/east)			Min O.F.A		
Front Upper OFA Press "H_2O	16.0/16.5	5.0/5.0			
Front Lower OFA Press "H_2O	2.5/4.0	3.0/4.0			
Rear Upper OFA Press "H_2O	18.0/18.0	4.0/5.0			
Rear Lower OFA Press "H_2O	15.0/15.0	5.0/5.0			
Blr Hopper Reinj. Press "H_2O	18.0/17.6	17.0/16.0			
Blr Hopper Reinj. yes/no	yes	yes			
Mech Hopper Reinj. Press "H_2O	15.0/14.5	14.0/13.5			
Mech Hopper Reinj. yes/no	yes	yes			
Relative Grate Speed west/east	6.0/6.0	6.0/6.0			
Ash Bed Thickness	4"	3-4"			
Clinkers	OK	OK			
OFA Fan Static Pressure "H_2O	25.0	28.0			

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 28,324
Stm Flow, lb/hr: 173,297
FW Flow, lb/hr: 186,919
% Design Capacity: 95.0%

TEST NO.	34				
DATE	5-30-78				
COAL	Western				
DESCRIPTION Vary O.F.A	max load 10" O.F.A	Bias Front O.F.A	Bias Rear O.F.A	Bias Upper O.F.A	Bias Lower O.F.A
TIME OF READING	14:23	15:00	15:24	15:48	16:14
West Coal Counter x 400 lb	109687				109754
East Coal Counter x 400 lb	104443				104507
Stm Flow Integrator x 350 lb	98253				99169
Fw Flow Integrator x 350 lb	240333				241321
Excess Oxygen, %	7.0	7.3	6.7	6.7	7.0
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.3				-.4
FD Fan Outlet Press, "H_2O	3.1				3.0
Air Inlet Air Heater, "H_2O	2.5				2.2
Air Outlet Air Heater, "H_2O	2.3				2.0
Stoker Inlet Pressure, "H_2O	1.6				1.3
Boiler Out. Pressure, "H_2O	-1.0				-1.0
Dust Collector Out Pressure, "H_2O	-2.8				-2.8
Economizer Out Pressure, "H_2O	-5.2				-5.3
Air Heater Out Pressure, "H_2O	-6.0 +				-6.0 +
Fan Out Pressure, "H_2O	6.3				6.2
Precip Out. Pressure, "H_2O	0				0
Overfire Air Press, "H_2O	15.5	19.5	22.5	22.0	18.0

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	912				912
Steam Pressure Header, psig	880				870
Steam Pressure Drum, psig	900				898
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	175				175
Air Flow, % (blue)	59				58
FW Flow, lb/hr x 1000 (red)	180				190
SH Out Temp, °F (red)	905				900
AH Out Temp, °F (blue)	755				760
Steam Pressure, psig (red)	855				850
TEMP RECORDER					
1-Grate Thermocouple, °F	620				615
2-Grate Thermocouple, °F	670	600	600	600	713
3-Grate Thermocouple, °F	683	to	to	to	709
4-Grate Thermocouple, °F	647	710	700	750	710
5-Grate Thermocouple, °F	675				675
6-Grate Thermocouple, °F	641				622
9-Flue Gas Boiler Out, °F	140				140
10-Flue Gas Economizer Out, °F	113				115
11-Flue Gas Air Heater Out, °F	121				122
12-Stm Coil Air Heater In, °F	120				122
13-Air Heater Air Out, °F	106				110

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	25				25
Feedwater	50				50
Attemperator	100+				100+
SF/AF Ratio	59				59
FD Damper	85				85
ID Damper	45				45
Overfire Air	65	75	70	67	71
FD Set Point	55				55
AMPS					
FD Fan Amps	117			117	117
ID Fan Amps	26			25	26
OFA Fan Amps	102			100	103
STOKER (west/east)					
Front Upper OFA Press "H_2O	10.0/10.0	15.5/15.5	5.0/5.0	14.0/14.0	5.0/5.0
Front Lower OFA Press "H_2O	10.0/10.0	15.5/16.0	4.0/5.0	4.0/5.0	15.0/14.0
Rear Upper OFA Press "H_2O	10.0/10.0	5.0/5.0	20.0/20.0	20.0/20.0	5.0/5.5
Rear Lower OFA Press "H_2O	10.0/10.5	6.0/5.0	16.0/17.0	5.0/5.0	13.2/14.0
Blr Hopper Reinj. Press "H_2O	12.5/17.0		15.0/15.5		15.5/16.5
Blr Hopper Reinj. yes/no	yes		yes		yes
Mech Hopper Reinj. Press "H_2O	16.0/15.5		17.0/18.0		16.0/15.5
Mech Hopper Reinj. yes/no	yes		yes		yes
Relative Grate Speed west/east	6.0/6.0		6.0/6.0		6.0/6.0
Ash Bed Thickness	4"		4"		
Clinkers	OK		OK		
OFA Fan Static Pressure "H_2O					

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 17707
Stm Flow, lb/hr: 100,134
FW Flow, lb/hr: 111,915
% Design Capacity: 54.9%

TEST NO.	35				
DATE	5-31-78				
COAL	WESTERN				
DESCRIPTION	100 Klbs/hr				
TIME OF READING	10:32	11:35	12:32	13:16	
West Coal Counter x 400 lb	110235	110259	110279	110296	
East Coal Counter x 400 lb	104959	104983	105003	105019	
Stm Flow Integrator x 350 lb	105647	105947	106222	106429	
Fw Flow Integrator x 350 lb	248668	249003	249308	249542	
Excess Oxygen, %	8.7	8.6	8.4	8.8	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.4	-.4	-.4		
FD Fan Outlet Press, "H_2O	.5	.5	.5		
Air Inlet Air Heater, "H_2O	.2	.3	.4		
Air Outlet Air Heater, "H_2O	.2	.4	.4		
Stoker Inlet Pressure, "H_2O	.1	.2	.2		
Boiler Out. Pressure, "H_2O	-.6	-.6	-.6		
Dust Collector Out Pressure, "H_2O	-1.5	-1.6	-1.5		
Economizer Out Pressure, "H_2O	-2.6	-2.7	-2.7		
Air Heater Out Pressure, "H_2O	-3.3	-3.3	-3.3		
Fan Out Pressure, "H_2O	8.0	8.0	8.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	20.0	20.0	20.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure psig	890	900	895		
Steam Pressure Header, psig	872	880	875		
Steam Pressure Drum, psig	880	885	890		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	100	98	100		
Air Flow, % (blue)	27	28	28		
FW Flow, lb/hr x 1000 (red)	105	110	110		
SH Out Temp, °F (red)	807	812	815		
AH Out Temp, °F (blue)	710	710	710		
Steam Pressure, psig (red)	852	850	860		
TEMP RECORDER					
1-Grate Thermocouple, °F	885	932	827		
2-Grate Thermocouple, °F	945	949	982		
3-Grate Thermocouple, °F	925	963	948		
4-Grate Thermocouple, °F	930	913	888		
5-Grate Thermocouple, °F	830	953	887		
6-Grate Thermocouple, °F	830	897	890		
9-Flue Gas Boiler Out, °F	131	133	133		
10-Flue Gas Economizer Out, °F	110	110	110		
11-Flue Gas Air Heater Out, °F	95	96	101		
12-Stm Coil Air Heater In, °F	103	115	116		
13-Air Heater Air Out, °F	105	101	104		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	15	15	8		
Feedwater	50	50	50		
Attemperator	65	75	65		
SF/AF Ratio	27	28	28		
FD Damper	85	85	85		
ID Damper	45	45	45		
Overfire Air	81	81	81		
FD Set Point	55	55	55		
AMPS					
FD Fan Amps	107	107	106		
ID Fan Amps	23	24	23		
OFA Fan Amps	117	118	117		
STOKER (west/east)					
Front Upper OFA Press "H_2O	16.0/15.0	16.0/16.0	16.0/16.0		
Front Lower OFA Press "H_2O	16.0/15.5	16.0/16.0	16.0/16.0		
Rear Upper OFA Press "H_2O	18.0/18.0	18.0/18.0	17.5/18.0		
Rear Lower OFA Press "H_2O	14.0/14.0	14.5/15.0	15.0/15.0		
Blr Hopper Reinj. Press "H_2O	17.5/17.5	17.5/17.5	17.0/17.5		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	15.0/14.0	14.0/14.5	14.5/14.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	6.0/6.0	6.0/6.0	6.0/6.0		
Ash Bed Thickness	4"	3-4"	3-4		
Clinkers	1-5	2-5 4/4	2/5		
OFA Fan Static Pressure "H_2O	25.5				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 29,591
Stm Flow, lb/hr: 178,581
FW Flow, lb/hr: 139,119
% Design Capacity: 97.7

TEST NO.	36				
DATE	6-1-78				
COAL	Western				
DESCRIPTION	no reinjection				
TIME OF READING	14:02	15:08	16:06	16:58	
West Coal Counter x 400 lb	110986	111028	111065	111100	
East Coal Counter x 400 lb	105663	105703	105737	105766	
Stm Flow Integrator x 350 lb	115428	115488	116477	116923	
... Flow Integrator x 350 lb	259582	260173	260693	261167	
Excess Oxygen, %	6.4	6.3	6.3	6.4	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.3	-.4	-.3		
FD Fan Outlet Press, "H_2O	2.8	3.0	3.0		
Air Inlet Air Heater, "H_2O	2.2	2.3	2.4		
Air Outlet Air Heater, "H_2O	2.0	2.1	2.2		
Stoker Inlet Pressure, "H_2O	1.4	1.4	1.5		
Boiler Out. Pressure, "H_2O	-.8	-.8	-.8		
Dust Collector Out Pressure, "H_2O	-2.5	-2.6	-2.6		
Economizer Out Pressure, "H_2O	-4.6	-4.9	-4.8		
Air Heater Out Pressure, "H_2O	-5.8	-6.0	-5.9		
Fan Out Pressure, "H_2O	7.0	7.0	7.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	15.0	15.0	15.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	920	920	920		
Steam Pressure Header, psig	880	880	875		
Steam Pressure Drum, psig	905	905	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	180	177		
Air Flow, % (blue)	56	58	57		
FW Flow, lb/hr x 1000 (red)	180	180	190		
SH Out Temp, °F (red)	900	900	907		
AH Out Temp, °F (blue)	780	760	760		
Steam Pressure, psig (red)	845	850	850		
TEMP RECORDER					
1-Grate Thermocouple, °F	620	635	647		
2-Grate Thermocouple, °F	685	695	622		
3-Grate Thermocouple, °F	640	755	643		
4-Grate Thermocouple, °F	635	665	654		
5-Grate Thermocouple, °F	660	685	697		
6-Grate Thermocouple, °F	625	640	650		
9-Flue Gas Boiler Out, °F	140	140	140		
10-Flue Gas Economizer Out, °F	116	114	115		
11-Flue Gas Air Heater Out, °F	117	125	116		
12-Stm Coil Air Heater In, °F	113	114	113		
13-Air Heater Air Out, °F	105	106	102		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	25	26	28		
Feedwater	50	50	50		
Attemperator	100+	100+	100+		
SF/AF Ratio	56	58	58		
FD Damper	86	85	85		
ID Damper	45	45	44		
Overfire Air	62	62	62		
FD Set Point	56	56	56		
AMPS					
FD Fan Amps	117	118	118		
ID Fan Amps	26	26	26		
OFA Fan Amps	102	102	102		
STOKER (west/east)					
Front Upper OFA Press "H_2O	10.0/10.0	10.0/10.0	10.0/10.0		
Front Lower OFA Press "H_2O	11.5/10.0	10.0/10.0	10.0/11.0		
Rear Upper OFA Press "H_2O	10.0/10.0	9.5/10.0	10.0/10.0		
Rear Lower OFA Press "H_2O	9.0/9.0	9.0/10.0	9.0/10.0		
Blr Hopper Reinj. Press "H_2O	2.0/no	1.5/1.0	2.5/1.0		
Blr Hopper Reinj. yes/no	no	no	no		
Mech Hopper Reinj. Press "H_2O	11.5/12.0	12.0/11.5	12.0/11.5		
Mech Hopper Reinj. yes/no	no/no	no	no		
Relative Grate Speed west/east	6.0/6.0	6.0/6.0	6.0/6.0		
Ash Bed Thickness	3"	3"	3"		
Clinkers	ok	ok	ok		
OFA Fan Static Pressure "H_2O		226			

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 29581
Stm Flow, lb/hr: 177,865
FW Flow, lb/hr: 176,423
% Design Capacity: 97.5

TEST NO.	37	38	39		
DATE	6-1-78				
COAL	WESTERN				
DESCRIPTION	15" OFA	25" OFA	5" OFA		
		23.5 actual			
TIME OF READING	21:20	22:55	24:10	24:55	
West Coal Counter x 400 lb	111266	111327	111371	111403	
East Coal Counter x 400 lb	105925	105991	106023	106053	
Stm Flow Integrator x 350 lb	119131	119932	120520	120952	
[illegible] Flow Integrator x 350 lb	263545	264432	265082	265576	
*Excess Oxygen, %	6.6	7.1	6.0	6.2	
DRAFT GAUGES					
*Furnace Draft, "H_2O	-0.3	-0.3	-0.3		
FD Fan Outlet Press, "H_2O					
Air Inlet Air Heater, "H_2O					
Air Outlet Air Heater, "H_2O					
Stoker Inlet Pressure, "H_2O					
Boiler Out. Pressure, "H_2O					
Dust Collector Out Pressure, "H_2O					
Economizer Out Pressure, "H_2O					
Air Heater Out Pressure, "H_2O					
Fan Out Pressure, "H_2O					
Precip Out. Pressure, "H_2O					
*Overfire Air Press, "H_2O	15.0	23.5	5.0		

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig					
Steam Pressure Header, psig					
Steam Pressure Drum, psig					
STRIP CHARTS					
* Stm Flow, lb/hr x 1000 (red)	175	180	175		
Air Flow, % (blue)					
FW Flow, lb/hr x 1000 (red)					
SH Out Temp, °F (red)					
AH Out Temp, °F (blue)					
Steam Pressure, psig (red)					
W/E					
TEMP RECORDER DAMPER POSITION					
1-Grate Thermocouple, °F FU					
2-Grate Thermocouple, °F FL		same			
3-Grate Thermocouple, °F RU			same		
4-Grate Thermocouple, °F RL					
5-Grate Thermocouple, °F Div					
6-Grate Thermocouple, °F Arch					
9-Flue Gas Boiler Out, °F					
10-Flue Gas Economizer Out, °F	Grate	Temps-	600-750	°F	
11-Flue Gas Air Heater Out, °F					
12-Stm Coil Air Heater In, °F					
13-Air Heater Air Out, °F					

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS W/E					
Plant Master static front	13.5/12.5	20.0/20.0	5.0/5.0		
Feedwater static rear	15.0/16.0	21.0/22.5	5.5/5.0		
Attemperator static reinjection	19.0/15.0	22.5/19.5	10.0/7.0		
SF/AF Ratio					
FD Damper					
ID Damper					
* Overfire Air	67	100+	41		
FD Set Point					
AMPS					
FD Fan Amps					
ID Fan Amps					
* OFA Fan Amps	105	120	88		
STOKER (west/east)					
* Front Upper OFA Press "H_2O	12.0/12.0	19.0/18.5	4.0/4.0		
* Front Lower OFA Press "H_2O	12.5/12.0	19.0/19.0	4.5/4.5		
* Rear Upper OFA Press "H_2O	13.5/13.5	20.0/20.5	5.0/5.0		
* Rear Lower OFA Press "H_2O	10.5/12.0	16.0/17.0	4.0/4.0		
* Blr Hopper Reinj. Press "H_2O	14.0/15.0	18.0/19.0	8.0/7.5		
Blr Hopper Reinj. yes/no					
* Mech Hopper Reinj. Press "H_2O	12.5/12.5	16.5/15.5	7.0/7.0		
Mech Hopper Reinj. yes/no					
Relative Grate Speed west/east					
Ash Bed Thickness					
Clinkers					
* OFA Fan Static Pressure "H_2O	27.0	28.0	29.5		

KVB

NOTES

TEST NO: 37 T_{WET} = 65°F

T_{DRY} = 80°F

RH = 45%

P_{bar} = 29.49 " Hg

wick still wet from this afternoon so redone

TEST NO: 38 T_{WET} = 66°F

T_{DRY} = 80°F

RH = 48%

P_{bar} = 29.49 " Hg

TEST NO: 39 T_{WET} = 64.5°F

T_{DRY} = 78°F

RH = 48%

P_{bar} = 29.47 " Hg

TEST NO:

TEST NO:

KVB

Coal Flow, lb/hr: 30,585
Stm Flow, lb/hr: 186,439
FW Flow, lb/hr: 204,838
% Design Capacity: 102.2

CONTROL ROOM DATA
TEST SITE C

TEST NO.	40				
DATE	6-2-78				
COAL	WESTERN				
DESCRIPTION	REINJECTION AT BOILER HOPPER ONLY				
TIME OF READING	9:49	11:02	12:07	12:33	
West Coal Counter x 400 lb	111700	111747	111789	111806	
East Coal Counter x 400 lb	106337	106383	106421	106440	
Stm Flow Integrator x 350 lb	125028	125685	126242	126484	
FW Flow Integrator x 350 lb	270081	270749	271410	271676	
Excess Oxygen, %	6.4	6.6	6.8	6.7	
DRAFT GAUGES					
Furnace Draft, "H_2O	-0.4	-0.4	-0.4		
FD Fan Outlet Press, "H_2O	3.0	3.1	3.0		
Air Inlet Air Heater, "H_2O	2.0	2.4	2.2		
Air Outlet Air Heater, "H_2O	2.0	2.2	2.0		
Stoker Inlet Pressure, "H_2O	1.4	1.6	1.4		
Boiler Out. Pressure, "H_2O	-1.0	-1.0	-1.0		
Dust Collector Out Pressure, "H_2O	-2.8	-2.8	-2.8		
Economizer Out Pressure, "H_2O	-5.2	-5.3	-5.2		
Air Heater Out Pressure, "H_2O	-6.0+	-6.0+	-6.0+		
Fan Out Pressure, "H_2O	6.5	6.5	6.5		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	15.0	15.0	15.0		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	910	930		
Steam Pressure Header, psig	870	870	890		
Steam Pressure Drum, psig	892	897	915		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	187	185	185		
Air Flow, % (blue)	58	60	60		
FW Flow, lb/hr x 1000 (red)	210	210	200		
SH Out Temp, °F (red)	900	900	905		
AH Out Temp, °F (blue)	760	770	760		
Steam Pressure, psig (red)	855	855	875		
TEMP RECORDER					
1-Grate Thermocouple, °F	660	645	592		
2-Grate Thermocouple, °F	734	693	695		
3-Grate Thermocouple, °F	725	680	670		
4-Grate Thermocouple, °F	716	645	674		
5-Grate Thermocouple, °F	724	680	685		
6-Grate Thermocouple, °F	670	635	682		
9-Flue Gas Boiler Out, °F	130	127	130		
10-Flue Gas Economizer Out, °F	110	113	112		
11-Flue Gas Air Heater Out, °F	97	152	152		
12-Stm Coil Air Heater In, °F	106	105	106		
13-Air Heater Air Out, °F	103	104	103		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	26	20	17		
Feedwater	50	50	50		
Attemperator	100+	100+	100		
SF/AF Ratio	57	60	60		
FD Damper	85	85	85		
ID Damper	45	45	45		
Overfire Air	68	62	63		
FD Set Point	56	57	56		
AMPS					
FD Fan Amps	120	120	121		
ID Fan Amps	27	26	26		
OFA Fan Amps	110	103	103		
STOKER (west/east)					
Front Upper OFA Press "H_2O	12.0/12.0	10.0/10.0	10.0/10.0		
Front Lower OFA Press "H_2O	10.0/10.0	9/10.0	10.0/10.0		
Rear Upper OFA Press "H_2O	12.0/12.0	10.0/10.0	9.5/10.0		
Rear Lower OFA Press "H_2O	12.0/11.5	10.0/10.5	10.0/10.0		
Blr Hopper Reinj. Press "H_2O	12.5/13.0	15.0/15.0	15.0/15.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	12.5/13.0	12.0/11.5	12.0/12.0		
Mech Hopper Reinj. yes/no	no	no	no		
Relative Grate Speed west/east	6.0/6.0	6.0/6.0	6.0/6.0		
Ash Bed Thickness	2-3"	2-3"	2-3"		
Clinkers	none	none	none		
OFA Fan Static Pressure "H_2O					

closed off dampers

KVB

NOTES

TEST NO: 40. O.F.A pressures were a little higher than yesterday so the dampers were closed a little to bring them to about 10" H_2O.

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

Coal Flow, lb/hr: 11,548
Stm Flow, lb/hr: 105,201
FW Flow, lb/hr: 126,077
% Design Capacity: 57.6

CONTROL ROOM DATA
TEST SITE C

TEST NO.	41				
DATE	6/7/78				
COAL	Eastern	High Fusion			
DESCRIPTION	100 klb/hr	High C.F.A.			
TIME OF READING	9:41	11:11	12:05	13:10	
West Coal Counter x 400 lb	114606	114627	114641	114658	
East Coal Counter x 400 lb	108882	108904	108916	108931	
Stm Flow Integrator x 350 lb	173645	174095	174366	174672	
FW Flow Integrator x 350 lb	324485	325002	325314	325690	
Excess Oxygen, %	8.9	8.9	8.9		
DRAFT GAUGES					
Furnace Draft, "H_2O	-.2	-.3	-.4		
FD Fan Outlet Press, "H_2O	1.0	1.0	1.0		
Air Inlet Air Heater, "H_2O	.7	.5	.5		
Air Outlet Air Heater, "H_2O	.6	.6	.6		
Stoker Inlet Pressure, "H_2O	.4	.4	.4		
Boiler Out. Pressure, "H_2O	-.4	-.5	-.6		
Dust Collector Out Pressure, "H_2O	-1.4	-1.6	-1.6		
Economizer Out Pressure, "H_2O	-2.7	-3.0	-3.0		
Air Heater Out Pressure, "H_2O	-3.4	-3.7	-3.6		
Fan Out Pressure, "H_2O	8.3	8.2	8.2		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O					

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	885	885	885		
Steam Pressure Header, psig	870	865	865		
Steam Pressure Drum, psig	880	880	880		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	100	105	105		
Air Flow, % (blue)	34	34	35		
FW Flow, lb/hr x 1000 (red)	120	120	120		
SH Out Temp, °F (red)	785	790	785		
AH Out Temp, °F (blue)	700	695	695		
Steam Pressure, psig (red)	855	855	855		
TEMP RECORDER					
1-Grate Thermocouple, °F	550	900	545		
2-Grate Thermocouple, °F	1045	990	1090		
3-Grate Thermocouple, °F	920	1015	1040		
4-Grate Thermocouple, °F	1140	965	900		
5-Grate Thermocouple, °F	1030	955	965		
6-Grate Thermocouple, °F	960	847	795		
9-Flue Gas Boiler Out, °F	138	136	135		
10-Flue Gas Economizer Out, °F	115	115	113		
11-Flue Gas Air Heater Out, °F	100	98	97		
12-Stm Coil Air Heater In, °F	117	116	115		
13-Air Heater Air Out, °F	109	110	105		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	38	40	44		
Feedwater	50	50	50		
Attemperator	71	71	75		
SF/AF Ratio	35	35	35		
FD Damper	85	85	85		
ID Damper	45	46	46		
Overfire Air	75	75	75		
FD Set Point	56	56	57		
AMPS					
FD Fan Amps	106	109	108		
ID Fan Amps	23	24	24		
OFA Fan Amps	112	113	113		
STOKER (west/east)					
Front Upper OFA Press "H_2O	14.5/14.0	14.5/14.5	14.5/14.5		
Front Lower OFA Press "H_2O	14.5/14.0	15.0/15.0	15.0/15.0		
Rear Upper OFA Press "H_2O	16.0/15.5	16.0/16.0	/16.0		
Rear Lower OFA Press "H_2O	12.5/13.0	13.0/13.5	13.5/13.5		
Blr Hopper Reinj. Press "H_2O	16.0/16.0	16.5/16.5	17.0/16.5		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	14.0/14.5	13.5/14.0	13.5/14.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.7/5.9	5.9/5.9	5.9/5.9		
Ash Bed Thickness	4"	4"	4"		
Clinkers	3-4	1, 3-4	1, 3+5		
OFA Fan Static Pressure "H_2O	25.0				

KVB

Coal Flow, lb/hr: 20,000
Stm Flow, lb/hr: 180,409
FW Flow, lb/hr: 195,841
% Design Capacity: 98.9

CONTROL ROOM DATA
TEST SITE C

TEST NO.	42				
DATE	6/9/78				
COAL	Eastern	High Fusion			
DESCRIPTION	High O	F.A.			
TIME OF READING	10:00	11:00	11:50	12:12	
West Coal Counter x 400 lb	115585	115616	115641	115651	
East Coal Counter x 400 lb	109668	109686	109704	109712	
Stm Flow Integrator x 350 lb	191152	191660	192105	192286	
FW Flow Integrator x 350 lb	344359	344914	345393	345590	
Excess Oxygen, %	7.4	7.4	7.3	7.3	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.4	-.3	-.3		
FD Fan Outlet Press, "H_2O	2.4	2.2	2.1		
Air Inlet Air Heater, "H_2O	1.6	1.4	1.5		
Air Outlet Air Heater, "H_2O	1.5	1.3	1.4		
Stoker Inlet Pressure, "H_2O	.8	.7	.8		
Boiler Out. Pressure, "H_2O	-1.0	-1.0	-.9		
Dust Collector Out Pressure, "H_2O	-3.0	-2.9	-2.8		
Economizer Out Pressure, "H_2O	-5.6	-5.3	-5.0		
Air Heater Out Pressure, "H_2O	-6.0+	-6.0+	-6.0+		
Fan Out Pressure, "H_2O	6.2	6.8	7.0		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	23.0	22.5	22.5		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	907	907	904		
Steam Pressure Header, psig	862	865	870		
Steam Pressure Drum, psig	843	845	874		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	182	182	175		
Air Flow, % (blue)	57	54	53		
FW Flow, lb/hr x 1000 (red)	190	187	195		
SH Out Temp, °F (red)	850	850	850		
AH Out Temp, °F (blue)	760	760	730		
Steam Pressure, psig (red)	857	857	850		
TEMP RECORDER					
1-Grate Thermocouple, °F	637	615	655		
2-Grate Thermocouple, °F	762	812	710		
3-Grate Thermocouple, °F	742	895	882		
4-Grate Thermocouple, °F	902	875	841		
5-Grate Thermocouple, °F	955	782	750		
6-Grate Thermocouple, °F	777	805	710		
9-Flue Gas Boiler Out, °F	127	130	126		
10-Flue Gas Economizer Out, °F	104	96	97		
11-Flue Gas Air Heater Out, °F	85	95	95		
12-Stm Coil Air Heater In, °F	95	102	102		
13-Air Heater Air Out, °F	95	95	95		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	44	45	46		
Feedwater	50	50	50		
Attemperator	100+	100+	95		
SF/AF Ratio	57	54	52		
FD Damper	85	85	85		
ID Damper	46	46	46		
Overfire Air	95	95	94		
FD Set Point	57	57	55		
AMPS					
FD Fan Amps	121	118	117		
ID Fan Amps	27	27	26		
OFA Fan Amps	125	123	123		
STOKER (west/east)					
Front Upper OFA Press "H_2O	18.0/18.5	18.0/18.5	18.5/18.0		
Front Lower OFA Press "H_2O	18.5/18.5	18.0/18.0	18.0/18.0		
Rear Upper OFA Press "H_2O	20.0/20.0	20.0/20.0	20.0/20.0		
Rear Lower OFA Press "H_2O	16.5/17.0	16.0/17.0	16.0/17.0		
Blr Hopper Reinj. Press "H_2O	18.5/18.5	18.0/18.0	18.0/18.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	15.5/16.0	16.0/16.0	16.0/16.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	6.0/5.9	6.0/5.9	6.0/5.9		
Ash Bed Thickness	3"	3"	3"		
Clinkers	None	None	None		
OFA Fan Static Pressure "H_2O	25.0				

KVB

NOTES

TEST NO: 42 - There was a sheared pin on the grate drive for grate #7 which caused the low bed. This was fixed about 11:30

TEST NO:

TEST NO:

TEST NO:

TEST NO:

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 15,000
Stm Flow, lb/hr: 142,250
FW Flow, lb/hr: 160,750
% Design Capacity: 77.9

TEST NO.	43				
DATE	6-13-78				
COAL	Eastern High Fusion				
DESCRIPTION	140 Klbs/hr	High O.F.A			
TIME OF READING	10:13	11:16	12:18	13:01	
West Coal Counter x 400 lb	117514	117535	117558	117571	
East Coal Counter x 400 lb	111336	111354	111372	111384	
Stm Flow Integrator x 350 lb	228114	228540	228968	229252	
F.W. Flow Integrator x 350 lb	386056	386537	387022	387342	
Excess Oxygen, %	—	—	—	—	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.2	-.3	-.2		
FD Fan Outlet Press, "H_2O	1.0	1.0	1.0		
Air Inlet Air Heater, "H_2O	.7	.7	.7		
Air Outlet Air Heater, "H_2O	.7	.7	.7		
Stoker Inlet Pressure, "H_2O	.4	.4	.4		
Boiler Out. Pressure, "H_2O	-.6	-.6	-.6		
Dust Collector Out Pressure, "H_2O	-1.8	-1.8	-1.7		
Economizer Out Pressure, "H_2O	-3.7	-3.6	-3.5		
Air Heater Out Pressure, "H_2O	-4.3	-4.3	-4.0		
Fan Out Pressure, "H_2O	8.3	8.3	8.3		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	22	22	21.5		

Shee 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	900	903	903		
Steam Pressure Header, psig	870	870	870		
Steam Pressure Drum, psig	890	891	870		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	145	145	142		
Air Flow, % (blue)	40	40	39		
FW Flow, lb/hr x 1000 (red)	157	153	150		
SH Out Temp, °F (red)	817	820	815		
AH Out Temp, °F (blue)	715	720	720		
Steam Pressure, psig (red)	857	858	857		
TEMP RECORDER					
1-Grate Thermocouple, °F	830	837	810		
2-Grate Thermocouple, °F	1080	913	875		
3-Grate Thermocouple, °F	1040	972	835		
4-Grate Thermocouple, °F	895	845	825		
5-Grate Thermocouple, °F	835	847	905		
6-Grate Thermocouple, °F	620	715	636		
9-Flue Gas Boiler Out, °F	123	123	125		
10-Flue Gas Economizer Out, °F	106	105	105		
11-Flue Gas Air Heater Out, °F	83	82	84		
12-Stm Coil Air Heater In, °F	105	106	108		
13-Air Heater Air Out, °F	94	93	95		

KVB

TEST NO.					
CONTROLS					
Plant Master	38	40	40		
Feedwater	50	50	50		
Attemperator	81	83	80		
SF/AF Ratio	39	40	37		
FD Damper	85	85	85		
ID Damper	45	45	45		
Overfire Air	85	85	84		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	111	112	111		
ID Fan Amps	25	25	25		
OFA Fan Amps	124	123	123		
STOKER (west/east)					
Front Upper OFA Press "H_2O	17.5/18.0	17.5/18.0	17.5/17.5		
Front Lower OFA Press "H_2O	17.5/17.6	17.5/17.5	17.5/17.5		
Rear Upper OFA Press "H_2O	19.0/19.0	19.0/19.0	19.0/19.0		
Rear Lower OFA Press "H_2O	16.0/16.0	16.0/16.0	16.0/16.0		
Blr Hopper Reinj. Press "H_2O	18.5/18.0	18.0/19.0	18.0/18.0		
Blr Hopper Reinj. yes/no	Yes	Yes	Yes		
Mech Hopper Reinj. Press "H_2O	15.0/15.0	15.0/15.0	15.0/15.0		
Mech Hopper Reinj. yes/no	Yes	Yes	Yes		
Relative Grate Speed west/east	5.6/5.8	5.6/5.8	5.6/5.8		
Ash Bed Thickness	3-4"	3-4"	3-4		
Clinkers	no	no	no		
OFA Fan Static Pressure "H_2O	26.5				

KVB

Coal Flow, lb/hr. 27,700
Stm Flow, lb/hr: 172,213
FW Flow, lb/hr: 152,237
% Design Capacity: 97

CONTROL ROOM DATA
TEST SITE C

TEST NO.	44				
DATE	6-15-78				
COAL	Eastern High Fusion				
DESCRIPTION	SASS- SO_x				
TIME OF READING	22:37	22:49	00:38	1:50	
West Coal Counter x 400 lb	118754	118830	118898	118948	
East Coal Counter x 400 lb	112417	112451	112511	112555	
Stm Flow Integrator x 350 lb	251371	251898	252829	253506	
FW Flow Integrator x 350 lb	412121	412694	413701	414437	
Excess Oxygen, %	—	—	—	—	
DRAFT GAUGES					
Furnace Draft, "H_2O	-.2	-.2	-.2		
FD Fan Outlet Press, "H_2O	2.4	2.4	2.4		
Air Inlet Air Heater, "H_2O	1.7	1.6	1.8		
Air Outlet Air Heater, "H_2O	1.6	1.6	1.6		
Stoker Inlet Pressure, "H_2O	1.0	1.0	1.0		
Boiler Out. Pressure, "H_2O	-.8	-.8	-.8		
Dust Collector Out Pressure, "H_2O	-2.7	-2.6	-2.7		
Economizer Out Pressure, "H_2O	-5.0	-4.8	-5.0		
Air Heater Out Pressure, "H_2O	-6.0+	-6.0	-6.0+		
Fan Out Pressure, "H_2O	6.8	7.0	6.9		
Precip Out. Pressure, "H_2O	0	0	0		
Overfire Air Press, "H_2O	24	24	24		

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	915	915	916		
Steam Pressure Header, psig	880	880	877		
Steam Pressure Drum, psig	900	900	900		
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	176	180		
Air Flow, % (blue)	56	54	55		
FW Flow, lb/hr x 1000 (red)	200	190	190		
SH Out Temp, °F (red)	890	885	885		
AH Out Temp, °F (blue)	757	750	755		
Steam Pressure, psig (red)	850	860	860		
TEMP RECORDER					
1-Grate Thermocouple, °F	560	552	578		
2-Grate Thermocouple, °F	520	497	547		
3-Grate Thermocouple, °F	510	530	537		
4-Grate Thermocouple, °F	535	545	590		
5-Grate Thermocouple, °F	565	565	574		
6-Grate Thermocouple, °F	560	535	545		
9-Flue Gas Boiler Out, °F	130	125	127		
10-Flue Gas Economizer Out, °F	116	110	110		
11-Flue Gas Air Heater Out, °F	95	95	112		
12-Stm Coil Air Heater In, °F	115	113	115		
13-Air Heater Air Out, °F	99	92	95		

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	46	45	41		
Feedwater	50	50	50		
Attemperator	100+	97	100+		
SF/AF Ratio	55	55	55		
FD Damper	85	85	85		
ID Damper	45	45	45		
Overfire Air	80	80	80		
FD Set Point	60	60	60		
AMPS					
FD Fan Amps	117	117	118		
ID Fan Amps	28	26	26		
OFA Fan Amps	121	121	121		
STOKER (west/east)					
Front Upper OFA Press "H_2O	19.0/19.0	19.0/19.0	19.0/19.0		
Front Lower OFA Press "H_2O	19.0/19.0	19.0/19.0	19.0/19.0		
Rear Upper OFA Press "H_2O	21.0/21.0	21.0/21.0	21.0/21.0		
Rear Lower OFA Press "H_2O	17.5/18.0	17.5/18.0	17.0/18.0		
Blr Hopper Reinj. Press "H_2O	18.0/18.0	18.0/19.0	18.0/18.0		
Blr Hopper Reinj. yes/no	yes	yes	yes		
Mech Hopper Reinj. Press "H_2O	16.0/15.0	16.0/15.5	16.0/15.0		
Mech Hopper Reinj. yes/no	yes	yes	yes		
Relative Grate Speed west/east	5.6/5.9	5.6/5.9	5.6/5.9		
Ash Bed Thickness	3-4"	3-4"	3-4"		
Clinkers	none	none	none		
OFA Fan Static Pressure "H_2O	25.0				

KVB

Coal Flow, lb/hr: 28,521
Stm Flow, lb/hr: 177,709
FW Flow, lb/hr: 193,747
% Design Capacity: 97.4%

CONTROL ROOM DATA
TEST SITE C

TEST NO.	45				
DATE	6/17-B				
COAL	WESTERN				
DESCRIPTION	SASS-SOx-BRINK				
TIME OF READING	19:15	20:42	22:03	23:25	24:07
West Coal Counter x 400 lb	120235	120290	120339	120389	120416
East Coal Counter x 400 lb	113656	113706	113750	113796	113822
Stm Flow Integrator x 350 lb	270245	270992	271668	272354	272720
FW Flow Integrator x 350 lb	433180	433991	434728	435473	435874
Excess Oxygen, %	—	—	—	—	—
DRAFT GAUGES					
Furnace Draft, "H_2O	-.1	-.1	-.2	-.2	
FD Fan Outlet Press, "H_2O	2.8	2.8	2.7	2.4	
Air Inlet Air Heater, "H_2O	2.0	2.0	2.0	2.0	
Air Outlet Air Heater, "H_2O	1.9	1.9	1.9	2.0	
Stoker Inlet Pressure, "H_2O	1.2	1.2	1.2	1.3	
Boiler Out. Pressure, "H_2O	-.8	-.8	-.8	-.9	
Dust Collector Out Pressure, "H_2O	-2.8	-2.8	-2.7	-2.8	
Economizer Out Pressure, "H_2O	-5.2	-5.3	-5.0	-5.4	
Air Heater Out Pressure, "H_2O	-6.0+	-6.0+	-6.0+	-6.0+	
Fan Out Pressure, "H_2O	6.3	6.2	6.5	6.2	
Precip Out. Pressure, "H_2O	0	0	0	0	
Overfire Air Press, "H_2O	23.5	23.5	23.5	24	

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910	912	910	918	
Steam Pressure Header, psig	892	885	870	870	
Steam Pressure Drum, psig	900	902	898	900	
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	175	177	175	180	
Air Flow, % (blue)	57	58	57	58	
FW Flow, lb/hr x 1000 (red)	187	190	190	200	
SH Out Temp, °F (red)	890	890	890	900	
AH Out Temp, °F (blue)	760	760	760	760	
Steam Pressure, psig (red)	855	857	860	860	
TEMP RECORDER					
1-Grate Thermocouple, °F	567	525	515	570	
2-Grate Thermocouple, °F	556	535	570	567	
3-Grate Thermocouple, °F	614	493	625	506	
4-Grate Thermocouple, °F	700	663	645	478	
5-Grate Thermocouple, °F	683	623	610	510	
6-Grate Thermocouple, °F	602	613	610	495	
9-Flue Gas Boiler Out, °F	133	137	135	135	
10-Flue Gas Economizer Out, °F	115	115	115	114	
11-Flue Gas Air Heater Out, °F	100	100	100	95	
12-Stm Coil Air Heater In, °F	116	110	107	110	
13-Air Heater Air Out, °F	104	104	105	106	

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	50	52	50	51	
Feedwater	50	50	50	50	
Attemperator	100+	100+	100+	100+	
SF/AF Ratio	59	58	57	58	
FD Damper	85	85	85	85	
ID Damper	45	45	45	45	
Overfire Air	180+	100+	100+	100	
FD Set Point	60	60	60	600	
AMPS					
FD Fan Amps	120	120	118	120	
ID Fan Amps	27	27	27	27	
OFA Fan Amps	120	120	119	120	
STOKER (west/east)					
Front Upper OFA Press "H_2O	18.5/19.0	18.0/18.5	18.0/18.5	18.5/18.5	
Front Lower OFA Press "H_2O	18.5/18.5	18.0/19.0	18.5/19.0	18.5/19.0	
Rear Upper OFA Press "H_2O	21.0/20.5	21.0/20.5	21.0/20.5	21.0/20.5	
Rear Lower OFA Press "H_2O	17.5/18.5	17.0/17.5	17.5/17.5	17.5/18.0	
Blr Hopper Reinj. Press "H_2O	18.0/18.0	17.5/18.0	17.5/18.0	17.5/18.0	
Blr Hopper Reinj. yes/no	Yes	Yes	Yes	Yes	
Mech Hopper Reinj. Press "H_2O	15.0/15.0	15.0/16.0	15.0/15.0	15.0/15.0	
Mech Hopper Reinj. yes/no	Yes	Yes	Yes	Yes	
Relative Grate Speed west/east	6.0/6.0	6.0/6.0	6.0/6.0	6.0/6.0	
Ash Bed Thickness	3"	3"	3"	3"	
Clinkers	None	None	None	None	
OFA Fan Static Pressure "H_2O	25"	25"			

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 17,645
Stm Flow, lb/hr: 180,729
FW Flow, lb/hr: 188,246
% Design Capacity: 99.0 %

TEST NO.	46				
DATE	6-20-78				
COAL	EASTERN LOW FUSION				
DESCRIPTION	High O.F.A.				
TIME OF READING	13:57	15:20	16:43	18:00	19:22
West Coal Counter x 400 lb	121704	121736	121768	121800	121832
East Coal Counter x 400 lb	115033	115062	115092	115120	115148
Stm Flow Integrator x 350 lb	296353	297040	297832	298501	299190
FW Flow Integrator x 350 lb	462472	463239	464050	464786	465540
Excess Oxygen, %	—	—	—	—	—
DRAFT GAUGES					
Furnace Draft, "H_2O	-.1	-.1	-.1	-.1	
FD Fan Outlet Press, "H_2O	2.5	2.8	2.7	2.8	
Air Inlet Air Heater, "H_2O	1.9	2.0	2.0	2.0	
Air Outlet Air Heater, "H_2O	1.7	2.0	1.8	1.8	
Stoker Inlet Pressure, "H_2O	1.1	1.3	1.2	1.2	
Boiler Out. Pressure, "H_2O	-.6	-.7	-.7	-.7	
Dust Collector Out Pressure, "H_2O	-2.3	-2.5	-2.5	-2.5	
Economizer Out Pressure, "H_2O	-4.6	-4.8	-4.9	-4.8	
Air Heater Out Pressure, "H_2O	-5.6	-6.0	-6.0+	-6.0	
Fan Out Pressure, "H_2O	7.5	7.2	7.0	7.0	
Precip Out. Pressure, "H_2O	0	0	0	0	
Overfire Air Press, "H_2O	23	23	23	23	

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	930	905	920	920	
Steam Pressure Header, psig	890	860	880	875	
Steam Pressure Drum, psig	915	885	905	902	
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	180	185	182	185	
Air Flow, % (blue)	56	58	58	57	
FW Flow, lb/hr x 1000 (red)	190	192	190	202	
SH Out Temp, °F (red)	850	840	857	850	
AH Out Temp, °F (blue)	720	725	727	730	
Steam Pressure, psig (red)	860	850	860	860	
TEMP RECORDER					
1-Grate Thermocouple, °F	735	630	595	570	
2-Grate Thermocouple, °F	715	665	646	622	
3-Grate Thermocouple, °F	710	695	593	605	
4-Grate Thermocouple, °F	604	616	627	552	
5-Grate Thermocouple, °F	687	606	585	554	
6-Grate Thermocouple, °F	628	578	543	494	
9-Flue Gas Boiler Out, °F	135	134	137	138	
10-Flue Gas Economizer Out, °F	115	115	117	115	
11-Flue Gas Air Heater Out, °F	114	105	106	108	
12-Stm Coil Air Heater In, °F	111	104	109	114	
13-Air Heater Air Out, °F	107	105	107	104	

Sheet 3 of 4

KVB

TEST NO.					
CONTROLS					
Plant Master	51	50	50	50	
Feedwater	50	50	50	50	
Attemperator	96	98	98	98	
SF/AF Ratio	57	58	58	58	
FD Damper	85	85	85	85	
ID Damper	45	45	45	45	
Overfire Air	100+	100+	100+	100+	
FD Set Point	60	60	60	60	
AMPS					
FD Fan Amps	119	120	119	119	
ID Fan Amps	26	26	26	26	
OFA Fan Amps	119	119	120	120	
STOKER (west/east)					
Front Upper OFA Press "H_2O	18.0/18.0	18.0/18.0	18.0/18.0	18.0/18.0	
Front Lower OFA Press "H_2O	18.0/18.0	19.0/19.0	18.5/19.0	19.0/19.0	
Rear Upper OFA Press "H_2O	20.5/20.5	20.5/20.5	20.5/20.5	20.5/20.5	
Rear Lower OFA Press "H_2O	16.0/17.0	16.0/17.0	16.0/17.0	16.0/17.0	
Blr Hopper Reinj. Press "H_2O	18.0/18.0	18.0/19.0	18.0/18.0	18.0/18.0	
Blr Hopper Reinj. yes/no	yes	yes	yes	yes	
Mech Hopper Reinj. Press "H_2O	15.0/15.0	15.0/15.0	15.0/15.0	15.0/15.0	
Mech Hopper Reinj. yes/no	yes	yes	yes	yes	
Relative Grate Speed west/east	6.1/6.0	6.1/6.0	6.1/6.0	6.1/6.0	
Ash Bed Thickness	3"	3"	3"	3"	
Clinkers	none	none	none	none	
OFA Fan Static Pressure "H_2O	24.0				

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 17,143
Stm Flow, lb/hr: 168,750
FW Flow, lb/hr: 187,650
% Design Capacity: 92.58

TEST NO.	48					
DATE	6-29-78					
COAL	Eastern Low Fusion					
DESCRIPTION	Gaseous - Vary O.F.A					
	MAX O.F.A.	Normal O.F.A	MIN	Normal O.F.A	MAX O.F.A	Min
TIME OF READING	17:50					16:10
West Coal Counter x 400 lb	125991					126041
East Coal Counter x 400 lb	119000					119050
Stm Flow Integrator x 350 lb	389582					390907
FW Flow Integrator x 350 lb	566198					567445
Excess Oxygen, %	—					
DRAFT GAUGES						
Furnace Draft, "H_2O	-.1					
FD Fan Outlet Press, "H_2O	2.9					
Air Inlet Air Heater, "H_2O	2.0					
Air Outlet Air Heater, "H_2O	1.8					
Stoker Inlet Pressure, "H_2O	1.3					
Boiler Out. Pressure, "H_2O	-.7					
Dust Collector Out Pressure, "H_2O	-2.4					
Economizer Out Pressure, "H_2O	-4.6					
Air Heater Out Pressure, "H_2O	-5.7					
ID Fan Out Pressure, "H_2O	7.8					
Precip Out. Pressure, "H_2O	0					
Overfire Air Press, "H_2O	23.5	15.0	5.0	15.0	23.0	5.0

Sheet 2 of 4

KVB

TEST NO.					
PRESSURE GAUGES					
Feedwater Pressure, psig	910				
Steam Pressure Header, psig	875				
Steam Pressure Drum, psig	900				
STRIP CHARTS					
Stm Flow, lb/hr x 1000 (red)	175	180	170	170	165
Air Flow, % (blue)	58	58	57	56	54
FW Flow, lb/hr x 1000 (red)	180				
SH Out Temp, °F (red)	867				
AH Out Temp, °F (blue)	730				
Steam Pressure, psig (red)	855				
TEMP RECORDER					
1-Grate Thermocouple, °F	677	550	550	600	600
2-Grate Thermocouple, °F	710				
3-Grate Thermocouple, °F	610	to	to	to	to
4-Grate Thermocouple, °F	675				750
5-Grate Thermocouple, °F	650	700	800	800	
6-Grate Thermocouple, °F	535				
9-Flue Gas Boiler Out, °F	150				
10-Flue Gas Economizer Out, °F	125				
11-Flue Gas Air Heater Out, °F	130				
12-Stm Coil Air Heater In, °F	110				
13-Air Heater Air Out, °F	100				

Sheet 3 of 4

KVB

TEST NO.						
CONTROLS						
Plant Master	42					
Feedwater	50					
Attemperator	95					
SF/AF Ratio	55					
FD Damper	85					
ID Damper	45					
Overfire Air	100	66	40	66	100	40
FD Set Point	60					
AMPS						
FD Fan Amps	117		117			
ID Fan Amps	25		24			
OFA Fan Amps	116		85	103	117	85
STOKER (west/east)						
Front Upper OFA Press "H_2O	19.0/18.0	21.0/18.0	4.0/4.0	17.0/18.0	17.5/17.5	3.5/3.0
Front Lower OFA Press "H_2O	19.5/18.6	17.0/16.0	4.5/4.5	16.0/18.0	19.0/18.0	4.0/3.5
Rear Upper OFA Press "H_2O	18.0/17.5	18.0/18.0	3.5/3.0	18.5/18.6	17.0/17.0	3.0/3.0
Rear Lower OFA Press "H_2O	17.0/17.0	18.0/18.0	3.0/3.0	9.0/10.0	15.0/15.0	3.0/3.0
Blr Hopper Reinj. Press "H_2O	10.0/10.0	9.0/9.0	3.0/3.0	8.5/7.0	9.0/9.0	3.0/3.0
Blr Hopper Reinj. yes/no	yes	yes		yes		
Mech Hopper Reinj. Press "H_2O	15.0/15.0	11.0/11.0	5.0/5.0	11.0/11.0	14.0/14.0	5.0/5.0
Mech Hopper Reinj. yes/no	yes	yes		yes		
Relative Grate Speed west/east	5.0/5.0					
Ash Bed Thickness	3"					
Clinkers	OK					
OFA Fan Static Pressure "H_2O	23.5	24.0	27.0	25.0	27.0	27.0

KVB

CONTROL ROOM DATA
TEST SITE C

Coal Flow, lb/hr: 11,022
Stm Flow, lb/hr: 105,856
FW Flow, lb/hr: 121,022
% Design Capacity: 58.0%

TEST NO.	49			50		
DATE	7-5-78			7-5-78		
COAL	Eastern Low Fusion			Eastern Low Fusion		
DESCRIPTION	Max O.F.A.			Min O.F.A.		
	Higher	Med O_2	Low O_2	High	Med	Low
TIME OF READING	11:20			14:15		15:50
West Coal Counter x 400 lb	128786			128830		128852
East Coal Counter x 400 lb	121764			121802		121822
Stm Flow Integrator x 350 lb	451585			452477		452946
FW Flow Integrator x 350 lb	635401			636416		636857
Excess Oxygen, %	—			—		—
DRAFT GAUGES						
Furnace Draft, "H_2O	-.2	-.3	-.2	-.2	-.2	-.2
FD Fan Outlet Press, "H_2O	1.2	.4	.2	1.0	.5	.2
Air Inlet Air Heater, "H_2O	.7	0	0	.7	.3	.2
Air Outlet Air Heater, "H_2O	.6	.2	.1	.7	.2	.1
Stoker Inlet Pressure, "H_2O	.4	.1	.1	.4	.2	.1
Boiler Out. Pressure, "H_2O	-.5	-.5	-.3	-.4	-.4	-.3
Dust Collector Out Pressure, "H_2O	-1.5	-1.5	-1.0	-1.1	-1.0	-.8
Economizer Out Pressure, "H_2O	-2.4	-2.9	-2.0	-2.3	-2.0	-1.7
Air Heater Out Pressure, "H_2O	-4.0	-3.4	-2.3	-2.8	-2.2	-1.7
Fan Out Pressure, "H_2O	8.3	8.2	8.7	8.5	8.8	8.8
Precip Out. Pressure, "H_2O	0	0	0	0	0	0
Overfire Air Press, "H_2O	23	23	23	5	5	5

Sheet 2 of 4

KVB

TEST NO.						
PRESSURE GAUGES						
Feedwater Pressure, psig	880	885	885	880	880	890
Steam Pressure Header, psig	865	870	870	865	865	870
Steam Pressure Drum, psig	875	880	860	880	870	880
STRIP CHARTS						
Stm Flow, lb/hr x 1000 (red)	100	105	105	105	100	105
Air Flow, % (blue)	38	28	18	36	29	24
FW Flow, lb/hr x 1000 (red)	112	120	120	115	110	120
SH Out Temp, °F (red)	790	790	785	790	770	750
AH Out Temp, °F (blue)	700	645	675	670	680	660
Steam Pressure, psig (red)	855	850	850	850	850	85
TEMP RECORDER						
1-Grate Thermocouple, °F	750	900	900	650	700	900
2-Grate Thermocouple, °F	847					
3-Grate Thermocouple, °F	809	to	to	to	to	to
4-Grate Thermocouple, °F	763	950	1100	850	880	1200
5-Grate Thermocouple, °F	765					
6-Grate Thermocouple, °F	714					
9-Flue Gas Boiler Out, °F	125					
10-Flue Gas Economizer Out, °F	105					
11-Flue Gas Air Heater Out, °F	92					
12-Stm Coil Air Heater In, °F	115					
13-Air Heater Air Out, °F	102					

Sheet 3 of 4

KVB

TEST NO.						
CONTROLS						
Plant Master	42	40	40	47	45	45
Feedwater	50	50	50	50	50	50
Attemperator	75	65	60	72	65	57
SF/AF Ratio	35	26	18	35	30	25
FD Damper	85	85	85	85	85	85
ID Damper	45	45	45	45	45	45
Overfire Air	100 +	100	100	41	41	48
FD Set Point	60	60	60	60	60	60
AMPS						
FD Fan Amps	109		107	107		
ID Fan Amps	24			23		
OFA Fan Amps	122			87		
STOKER (west/east)						
Front Upper OFA Press "H_2O	19.0/19.0			3.0/4.0		
Front Lower OFA Press "H_2O	18.0/18.0			3.5/4.0		
Rear Upper OFA Press "H_2O	19.0/16.5			3.5/3.5		
Rear Lower OFA Press "H_2O	14.9/15.0			3.0/3.5		
Blr Hopper Reinj. Press "H_2O	9.0/9.0			3.5/3.0		
Blr Hopper Reinj. yes/no	yes			yes		
Mech Hopper Reinj. Press "H_2O	18.5/16.0			5.0/5.0		
Mech Hopper Reinj. yes/no	yes			yes		
Relative Grate Speed west/east	5.9/5.9			5.9/5.9		
Ash Bed Thickness	2-3"			pile on grate #1 5"		
Clinkers	OK			OK		
OFA Fan Static Pressure "H_2O	23.5			28.0		

SECTION 2.0

PARTICULATE DATA

		PAGE
2.1	PARTICULATE DATA SUMMARY	136
2.2	PARTICULATE DATA	142
2.3	PARTICULATE LAB WORKSHEET	190

PARTICULATE DATA SUMMARY
PART I

LOCATION: ABMA Site C

TEST NO.	Total Mass mgm.	Dry Gas Volume ft^3	Liquid Coll. ml.	Baro. Press. "Hg	Static Press. "H_2O	Pitot ΔP "H_2O	Orifice ΔH "H_2O	Stack Gas Temp. °R	Excess O_2 %	Sampling Time min.	Nozzle Dia. in.	Pitot Factor n.d.	Fuel Factor SCF/10^6BTU	Flue Gas MW g/g mole
1 D.C.	—	22.056	36	29.46	-.78	0.273	0.374	846	7.3	48	.247	.817	9820	29.41
8 BLR	12429.5	40.256	41	29.75	-.70	0.221	0.515	1042	10.2	72	.312	.837	9820	29.20
9 BLR	26043.2	39.380	43	29.76	-.40	0.227	0.561	1059	8.9	72	.312	.837	9820	29.45
9 D.C.	1428.6	66.214	93.7	29.76	-.56	0.295	0.855	846	8.9	96	.312	.817	9820	29.28
10 BLR	6485.0	41.600	53	29.60	-.98	0.234	0.601	1060	9.1	72	.312	.837	9820	29.30
10 D.C.	626.9	50.361	78	29.60	-.78	0.300	0.847	846	9.1	72	.312	.817	9820	29.17
11 D.C	643.5	50.259	73	29.50	-.86	0.315	0.889	867	9.1	72	.312	.817	9820	29.30
11 BLR	7523.8	41.660	52	29.50	-.94	0.240	0.602	1074	9.1	72	.312	.837	9820	29.19
12 BLR	21,357.4	42.913	55.8	29.42	-.41	0.249	0.617	1058	8.9	72	.312	.837	9820	
12 D.C	990.0	48.870	77	29.42	-.68	0.310	0.858	854	8.1	72	.312	.817	9820	
13 BLR	22,065.0	39.965	56.5	29.42	-.79	0.210	0.52	1047	8.9	72	.312	.837	9820	
13 D.C.	855.2	47.048	74.9	29.42	-.70	0.269	0.75	857	7.8	72	.312	.817	9820	
14 BLR	23,285.9	44.16	60.5	29.12	-.60	0.250	0.62	1055	9.2	72	.312	.837	9820	
14 DC.	1239.9	51.55	84.9	29.12	-.85	0.34	0.91	845	9.0	72	.312	.817	9820	
15 DC	1057.8	50.69	77.6	29.42	-.64	0.32	0.90	850	8.7	72	.312	.817	9820	
15 BLR	24,066.6	41.28	59.3	29.47	-.65	0.21	0.57	1050	9.1	72	.312	.837	9820	
16 BLR	26,188.0	41.630	65.5	29.17	-.94	0.253	0.628	1064	8.7	72	.312	.837	9820	
16 D.C.	1142.3	50.203	87	29.17	-.70	0.314	0.885	845	8.9	72	.312	.817	9820	
19 BLR	26,835.7	40.452*	53	29.19	-.85	0.248	0.614	1060	8.7	72	.312	.837	9820	
19 DC.	1180.3	50.529	87	29.19	-.62	0.307	0.813	826	8.6	72	.312	.817	9820	
20 BLR	9503.8	33.701	39	29.05	-.50	0.43	0.372	1030	11.0	72	.312	.837	9820	

* Dry Gas Meter Stuck

#15900 rev.

PARTICULATE DATA SUMMARY
PART I

LOCATION: ABMA Site C

TEST NO.	Total Mass mgm.	Dry Gas Volume ft^3	Liquid Coll. ml.	Baro. Press. "Hg	Static Press. "H_2O	Pitot ΔP "H_2O	Orifice ΔH "H_2O	Stack Gas Temp. °R	Excess O_2 %	Sampling Time min.	Nozzle Dia. in.	Pitot Factor n.d.	Fuel Factor SCF/10^6BTU	Flue Gas MW g/g mole
20 D.C.	457.1	40.876	62.4	29.05	-.78	0.198	0.585	837	10.7	72	0.312	.817	9820	28.91
23 B/R	39,659.6	50.310	117.6	29.58	-.85	0.35	0.91	1077	8.6	72	0.312	.837	9820	28.88
23 D.C.	1,639.8	58.028	162	29.58	-.69	0.413	1.18	856	8.5	72	0.312	.817	9820	28.70
24 B/R.	39,133.1	46.920	122	29.62	-.85	0.338	0.782	1080	8.7	72	0.312	.837	9820	28.72
24 D.C.	1038.0	4.622 32.607	102	29.62	-.71	0.48 0.440	0.587	843 847	8.5	6 66	0.312 0.249	.817	9820	28.77
25 B/R	19,404.2	35.173	87.1	29.70	-.68	0.19	0.42	1070	8.6	72	0.312	.837	9820	28.85
25 D.C.	446.5	30.047	81.7	29.70	-.68	0.27	0.32	832	8.5	72	0.249	.817	9820	28.74
26 B/R	39,783.8	48.61	109.9	29.52	-1.5	0.34	0.80	1085	9.9	72	0.312	.837	9820	28.79
26 D.C.	988.9	38.209	91.8	29.52	-.82	0.406	0.494	843	9.5	72	0.249	.817	9820	28.75
27 B/R	37,451.4	45.11	104.9	29.55	-1.2	0.32	0.75	1088	8.9	72	0.312	.837	9820	28.83
27 D.C.	1037.6	37.807	91	29.55	-.82	0.426	0.518	852	8.7	72	0.249	.817	9820	28.80
28 B/R	39,311.4	45.42	95	29.65	-1.2	0.34	0.78	1100	9.0	72	0.318	.837	9820	28.96
28 D.C	947.4	38.96	100	29.65	-.80	0.47	0.56	859	9.1	72	0.249	.817	9820	28.74
29 B/R	45,139.9	45.14	108.6	29.64	-.68	0.35	0.79	1094	8.4	72	0.318	.837	9820	28.84
29 D.C.	733.9	36.80	110.4	29.64	-.68	0.43	0.52	852	8.6	72	.0249	.817	9820	28.58
35 B/R	9,923.7	29.09	70.8	29.48	-.71	0.13	0.31	1037	10.6	72	0.318	.837	9820	28.63
35 D.C.	210.2	26.79	60	29.48	-.68	0.215	0.258	865	10.8	72	0.249	.817	9820	28.71
36 B/R	10,369.7	43.46	112	29.36	-1.2	0.319	0.772	1085	8.1	72	0.318	.837	9820	28.81
36 D.C.	565.3	38.804	111	29.36	-.8	0.42	0.50	860	8.0	72	0.249	.817	9820	28.70
40 B/R	8,298.8	48.573	92.4	29.75	-1.3	0.35	.515	1090	8.3	72	0.318	.837	9820	29.05
40 D.C.	499.6	38.920	104.2	29.75	-.86	0.438	0.525	847	8.4	72	0.249	.817	9820	29.05

#15900 rev.

PARTICULATE DATA SUMMARY
PART I

LOCATION: ABMA Site C

TEST NO.	Total Mass mgm.	Dry Gas Volume ft^3	Liquid Coll. ml.	Baro. Press. "Hg	Static Press. "H_2O	Pitot ΔP "H_2O	Orifice ΔH "H_2O	Stack Gas Temp. °R	Excess O_2 %	Sampling Time min.	Nozzle Dia. in.	Pitot Factor n.d.	Fuel Factor SCF/10^6BTU	Flue Gas MW g/g mole
41BIR	11,904.8	35.370	51.6	29.20	-.77	0.169	0.457	1048	11.3	72	0.318	0.837		29.11
41D.C.	301.1	27.225	36	29.20	-.77	0.203	0.263	850	11.4	72	0.249	0.817		29.02
42BIR	34,756.8	49.220	68.5	29.57	-1.6	0.345	0.947	1081	9.4	72	0.318	0.837		29.33
42D.C.	1529.1	57.028	88.2	29.57	-.70	0.43	1.09	846	9.5	72	0.318	0.817		29.29
43BIR	19331.6	38.686	50.2	29.74	-.86	0.208	0.573	1060	9.8	72	0.318	0.837		29.30
43D.C.	782.8	45.944	73.4	29.74	-.68	0.256	0.729	837	9.7	72	0.318	0.817		29.32

#15900 rev.

PARTICULATE DATA SUMMARY
PART II

Location ABMA Site C

TEST NO.	LOAD %	O_2 %	CONDITIONS	EMISSIONS lb/10^6BTU	EMISSIONS GR/SCF	EMISSIONS LB/HR	Moisture %	Stack Gas Velocity Ft/sec	Stack Gas Flow SCF/sec	Isokin. %
1 D.C.	60.0	7.3	Max load, low O_2							
8 BIR.	42.0	10.2	Low load, norm O_2	13.087	4.787	2898	4.62	36.87	1177	99
9 BIR	54.4	8.9	Full reinjection	24.996	10.248	6214	4.94	37.49	1179	97
9 D.C.	54.4	8.9		0.815	0.334	174	6.31	37.40	1014	99
10 BLR	56.6	9.1	No reinjection	6.023	2.429	1493	5.74	38.31	1195	101
10 D.C.	56.6	9.1		0.481	0.194	102	6.89	37.90	1022	100
11 D.C.	56.6	9.1	Bir hopper reinjection only	0.496	0.202	106	6.51	39.30	1030	98
11 BIR.	56.6	9.1		7.002	2.823	1747	5.65	39.19	1203	100
12 BLR	56.6	8.9	High Balanced OFA	19.022	7.799	4939	5.89	39.57	1231	101
12 D.C.				0.690	0.302	160	6.72	38.74	1029	100
13 BIR.	55.2	8.9	Low Balanced OFA	21.110	8.658	5058	6.37	36.17	1136	102
13 D.C.				0.637	0.285	140	7.11	36.15	956	99
14 BIR.	56.5	9.2	Bias Upper OFA	20.884	8.350	5278	6.25	39.81	1229	103
14 D.C.				0.936	0.381	211	7.41	40.57	1077	96
15. DC.	55.5	9.1	Bias Lower OFA	0.784	0.327	176	6.86	39.26	1048	97
15 BLR				22.627	9.123	5329	6.46	36.18	1136	106
16 BIR	56.4	8.7	Bias Front OFA	23.856	9.944	6299	7.10	40.20	1232	97
16 D.C.				0.542	0.359	192	7.75	38.95	1036	98
19. BIR	56.0	8.7	Bias Rear OFA	25.142	10.479	6588	5.98	39.71	1222	95
19. D.C.				0.878	0.369	197	7.71	38.06	1037	98
20 BIR.	33.6	11.0	Low load	13.229	4.479	2165	5.34	29.78	940	100

#15900 Rev.

PARTICULATE DATA SUMMARY
PART II

Location ABMA Site C

TEST NO.	LOAD %	O_2 %	CONDITIONS	EMISSIONS lb/10^6BTU	EMISSIONS GR/SCF	EMISSIONS LB/HR	Moisture %	Stack Gas Velocity Ft/sec	Stack Gas Flow SCF/sec	Isokin. %
20 D.C.	33.6	11.0	Low Load	0.509	0.178	75	6.93	30.85	825	98
23 BIR	60.6	8.6	High Balanced OFA.	29.222	12.280	9225	10.06	47.58	1461	105
23 DC.	60.6	8.5	"	1.038	0.440	272	11.77	45.11	1201	103
24 BIR.	59.8	8.7	Low Balanced OFA	31.138	12.979	9601	11.05	46.92	1438	100
24 DC.	59.8	8.5	"	1.025	0.434	279	11.58	46.40	1251	96
25 BIR.	47.6	8.6	High Balanced OFA	20.393	8.569	4772	10.56	34.88	1083	100
25 D.C.	47.6	8.5	"	0.545	0.231	117	11.48	35.86	987	102
26 BIR.	60.3	9.9	Bias Upper OFA	33.986	12.778	9424	9.78	47.23	1434	103
26 D.C.	60.3	9.5	"	1.038	0.404	249	10.34	44.39	1198	105
27 BIR.	61.0	8.9	Bias Lower OFA	31.587	12.951	9255	10.02	45.81	1340	99
27 D.C.	61.0	8.7	"	1.028	0.428	269	10.34	45.65	1220	102
28 BIR.	60.3	9.0	Bias Front OFA.	33.091	13.455	9851	9.08	47.29	1424	93
28 D.C.	60.3	9.1	"	0.938	0.378	249	10.92	48.12	1380	101
29 BIR	60.7	8.4	Bias Rear OFA.	36.416	15.550	11613	10.30	47.93	1452	91
29 D.C.	60.7	8.6	"	0.738	0.310	197	12.54	45.97	1233	101
35 BIR	33.4	10.6	High Balanced OFA	15.163	5.340	2495	10.47	28.58	909	94
35 DC.	33.4	10.8	"	0.356	0.123	54	9.73	32.76	861	101
36 BIR	59.5	8.1	No Reinjection	8.567	3.746	2669	11.05	45.84	1385	92
36 DC.	59.5	8.0	"	0.519	0.229	142	12.13	45.77	1304	108
40 BIR	62.1	8.3	BIR Hpr reinjection only	6.149	2.647	1984	8.30	47.82	1457	96
40 D.C.	62.1	8.4	"	0.466	0.199	127	11.31	45.80	1240	105

#15900 Rev.

PARTICULATE DATA SUMMARY
PART II

Location AB/M.A Site C

TEST NO.	LOAD %	O_2 %	CONDITIONS	EMISSIONS lb/10^6BTU	EMISSIONS GR/SCF	EMISSIONS LB/HR	Moisture %	Stack Gas Velocity Ft/sec	Stack Gas Flow SCF/sec	Isokin. %
41 BIR	35.1	11.3	High Balanced OFA.	16.194	5.317	2795	6.61	32.69	1018	97
41 DC.	35.1	11.4	"	0.538	0.175	75	6.03	31.56	835	101
42 BIR	60.1	9.4	"	27.997	11.003	8119	6.24	47.01	1435	96
42 DC.	60.1	9.5	"	1.072	0.418	262	6.89	45.30	1220	91
43 BIR.	47.4	9.8	"	20.288	7.697	4488	5.78	35.91	1134	96
43 DC.	47.4	9.7	"	0.685	0.262	128	7.02	34.53	952	95

#15900 Rev.

PARTICULATE

DATA

Sampling Time Per Point, Min
4.0

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 110.3%

TEST NUMBER 1
DATE 4-13-78
OPERATOR R.A.P + JO
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	14:07	.31	.44	1544.49	380		325		100	120		3.8
2		.27	.38	1546.31	380		290		95	120		3.5
3		.32	.46	1548.27	385		280		90	122		—
4		.29	.42	1550.18	385		280		80	122		4.2
5		.35	.50	1552.21	385		300		75	125		4.8
6		.27	.39	1553.92	399		310		73	128		4.3
7		.24	.30	1555.54	390		320		85	132		4.0
8		.27	.36	1558.90	390		310		78	132		4.5
9		.28	.35	1558.90	390		310		68	135		4.8
10		.23	.29	1560.46	385		300		65	140		4.1
11		.27	.34	1562.09	380		290		72	140		4.8
12		.17	.26	1563.47	—		290		72	140		4.0
Average		.273	.37	20.974	386							

METER VOL. END 1563.974
START 1542.496
SAMPLE VOL. 20.974 ft^3 - 22.056

(METER CORR) 1.0516

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.78" H_2O	29.46

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)=
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	126	-	100	=	26
#2	104	-	100	=	4
#3	1	-	0	=	1
				Total	31

#4 Silica Gel	g(End)		g(Start)		Δgrams
		-		=	5

Total Vol. H_2O 36 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft^3/min

ISOKINETICS = _____ %

TEST NUMBER 2

DATE 4-25-78

OPERATOR R.AP+JD

FUEL

SITE C

PROBE LOCATION BLR-OUT

Sampling Time Per Point, Min
3

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #6		.23	.57	2136.50	570	240	300		81	50		4.5
		.23	.57	2138.82	580	320	280		63	51		4.5
		.21	.50	2140.64	580	360	325		65	53		4.5
		.18	.45	2142.76	580	345	335		62	53		3.8
PORT #5		.28	.65	2144.17	580	350	300		85	52		5.2
		.23	.53	2145.88	585	275	315		62	53		4.8
	16:16	.185	.43	2147.44	585	300	310		65	55		4.3
		.16	.37	2148.85	545	315	320		68	55		3.8
PORT #4		.28	.65	2150.68	580	360	285		90	55		5.5
		.23	.52	2152.38	600	340	305		68	58		5.0
		.26	.60	2154.17	600	330	315		65	58		5.5
		.12	.28	2155.405	585	315	320		68	60		3.8
PORT #3		.27	.66	2157.29	585	295	320		78	60		6.2
		.24	.55	2158.98	600	290	320		70	60		5.5
		.17	.39	2160.41	600	320	320		70	60		4.5
		.08	.185	2161.40	570	320	310		70	60		3.2
PORT #2		.26	.60	2163.17	580	250	270		82	60		5.5
		.24	.55	2164.87	580	275	280		70	62		5.5
		.19	.44	2166.42	585	310	280		70	62		5.0
		.20	.46	2167.99	570	320	285		68	62		5.0
PORT #1		.28	.65	2169.83	580	250	260		75	62		6.5
		.28	.65	2171.69	580	285	270		70	62		6.5
		.26	.60	2173.48	585	335	280		70	63		6.2
		.25	.57	2175.224	585	330	290		70	63		6.0
Average		.221	.515	40.256	582							

METER VOL. END 2175.224

START 2134.968

SAMPLE VOL. 40.256 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.70" H_2O	29.75

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .312

=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	128	-	100	=	28
#2	102	-	100	=	2
#3	0	-	0	=	0
				Total	30

#4	g(End)		g(Start)		Δgrams
Silica Gel	155	-	144	=	11

Total Vol. H_2O 41 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 96.4%

TEST NUMBER 9
DATE 5-1-78
OPERATOR JD
FUEL
SITE C
PROBE LOCATION BLR-OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2,%	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
PORT #1	13:20	.29	.69	2176.61	580	225	305		120	80		—
		.29	.69	2181.41	600	285	300		120	83		5.0
		.26	.60	2183.09	600	325	305		70	85		4.4
		.21	.48	2184.58	580	340	305		75	85		3.8
PORT #2		.26	.60	2186.25	600	270	290		85	87		4.4
		.28	.62	2187.96	595	300	290		75	87		4.6
		.23	.54	2189.58	605	320	293		73	90		4.2
		.21	.48	2191.05	595	350	300		75	92		4.0
PORT #3		.29	.74	2192.99	600	271	290		73	75	*	6.0
		.28	.72	2194.90	610	300	290		73	75		6.0
		.18	.46	2196.41	605	330	300		75	75		4.3
		.07	.18	2197.35	580	345	300		79	75		2.5
PORT #4		.28	.72	2199.16	610	295	305		85	80		6.0
		.24	.62	2200.92	620	310	310		70	82		5.8
		.17	.42	2202.37	620	350	320		65	81		4.5
		.13	.32	2203.67	610	365	320		70	81		4.0
PORT #5		.29	.24	2205.53	600	255	280		85	80		7.0
		.24	.62	2207.28	600	310	290		70	80		6.5
		.20	.52	2208.91	600	350	300		70	80		5.5
		.21	.53	2210.61	600	360	305		70	80		6.0
PORT #6		.23	.59	2212.27	580	360	290		80	86		6.2
		.22	.56	2213.92	595	305	290		70	80		6.2
		.20	.51	2215.53	600	350	300		70	81		6.1
		.20	.51	2217.17	600	365	310		70	85		6.2
Average		.227	.56	39.380	599							

* NOMOCHANGE

METER VOL. END 2217.17
START 2177.79
SAMPLE VOL 39.380 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.40 "H_2O	29.76

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	135	-	100	=	35
#2	103	-	100	=	3
#3	0	-	0	=	0
				Total	38

#4 Silica Gel	g(End)		g(Start)		Δgrams
	—	-	5	=	5
				Total Vol. H_2O	43 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
4.0

ISOKINETICS = 99.2

TEST NUMBER 9

DATE 6-1-78

OPERATOR R.A.P.

FUEL

SITE C

PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
EAST PORT 1	13:38	.24	.73	1567.16	380	310	310		—	118		6.0
2		.26	.80	1570.60	385	310	310		92	132		6.3
3		.30	.92	1573.40	385	320	310		92	135		7.8
4		.30	.92	1576.14	385	310	310		90	138		7.8
5		.32	.96	1578.88	385	310	310		80	140		8.2
6		.34	1.02	1581.74	385	310	310		80	140		7.0
7		.34	1.02	1584.58	385	320	320		78	145		9.2
8		.33	.99	1587.40	385	300	300		82	148		9.0
9		.33	.93	1590.10	385	300	300		90	150		9.0
10		.34	.96	1592.79	385	290	290		110	145		9.2
11		.27	.76	1595.33	380	295	295		90	145		7.9
12		.18	.50	1597.34	—	290	290		90	145		5.5
NORTH PORT 1	16:13	.26	.73	1599.70	383	270	280		110	146		7.5
2		.31	.88	1602.36	385	285	285		88	145		9.0
3		.36	1.01	1605.16	390	285	285		82	148		10.8
4		.36	1.01	1607.92	390	285	285		80	148		11.0
5		.35	.98	1610.65	390	280	280		82	150		11.0
6		.37	1.05	1613.51	390	280	285		80	152		12.0
7		.30	.85	1616.06	390	280	280		83	153		10.0
8		.30	.85	1618.60	390	280	285		90	155		10.5
9		.28	.79	1621.09	390	280	285		85	156		9.8
10		.27	.76	1623.49	390	280	280		83	158		9.3
11		.16	.45	1625.39	—	280	280		85	158		6.3
12		.23	.65	1627.565	—	280	280		85	158		8.8
Average		.295	.855		386	—	—	—	—	—	—	—

METER CORR. 1.0516

METER VOL. END 1627.565

START 1564.600

SAMPLE VOL 62.965 ft^3 - 66.213

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.56" H_2O	29.76

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔHg = Noz(Ideal)=

ΔH_2O = Noz(Actual)= .312

=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	160	-	100	=	60
#2	118	-	100	=	18
#3	0	-	0	=	0
				Total	78

#4 Silica Gel	g(End)		g(Start)		Δgrams
	160.7	-	145	=	15.7
				Total Vol. H_2O	93.7 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.0

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 101.1%

TEST NUMBER 10
DATE 5-3-78
OPERATOR J.O
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1		.29	.74	2225.38	580	250	310		70	55		6.3
		.29	.74	2227.38	599	290	315		60	57		6.3
		.26	.66	2228.07	600	330	325		57	60		5.4
		.25	.64	2230.06	600	335	340		60	60		5.2
PORT #2		.29	.74	2232.84	600	180	320		70	60		6.3
		.28	.67	2234.68	600	260	325		65	63		5.5
		.22	.56	2236.42	600	320	330		65	63		5.0
		.22	.56	2238.12	600	340	335		70	65		5.0
PORT #3		.30	.76	2240.09	600	250	328		75	69		6.6
		.28	.67	2241.88	620	280	340		70	63		6.0
		.17	.44	2243.68	610	330	340		70	69		4.8
		.09	.37	2245.05	590	350	360		70	70		3.7
PORT #4		.28	.67	2246.87	600	320	360		70	60		6.4
		.25	.64	2248.64	620	360	375		80	70		6.1
		.16	.41	2250.11	615	340	380		73	75		4.8
		.11	.28	2251.25	600	345	367		70	72		3.4
PORT #5		.29	.74	2253.15	605	270	350		70	75		7.0
		.24	.62	2254.87	605	280	360		60	73		6.3
		.20	.53	2256.50	605	330	350		55	70		5.8
		.20	.53	2258.08	600	345	355		65	80		7.8
PORT #6		.25	.64	2259.76	590	250	335		72	85		6.5
		.26	.66	2261.52	580	290	340		60	88		6.5
		.24	.62	2263.23	600	330	345		60	90		6.8
		.20	.53	2264.79	600	360	345		65	90		6.0
Average		.234	.60	41.600	600							

METER VOL. END 2264.79
START 2223.19
SAMPLE VOL. 41.60 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.98" H_2O	29.60

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	139	100	39
#2	103	100	3
#3	0	0	0
		Total	42

#4	g(End)	g(Start)	Δgrams
Silica Gel	157.7	146.7	11.0

Total Vol. H_2O 53 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 100.1

TEST NUMBER 10
DATE 5-3-78
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
N.P 1	9:07	.28	.79	1634.62	380	310	290		80	112		5.8
2		.31	.85	1636.88	380	310	300		80	112		6.3
3		.35	.99	1638.90	380	290	300		80	115		7.5
4		.37	1.05	1641.23	380	290	310		70	116		8.2
5		.40	1.13	1643.53	385	290	310		72	118		9.2
6		.40	1.13	1645.84	280	290	310		72	120		9.3
7		.33	.93	1647.98	385	290	310		73	120		8.0
8		.29	.82	1649.97	385	290	300		73	122		7.2
9		.28	.79	1651.89	385	290	310		73	125		7.2
10		.27	.76	1653.78	385	290	310		73	128		7.2
11		.25	.70	1655.61	385	290	310		73	128		6.8
12	9:56	.15	.42	1657.08	380	290	315		74	130		4.8
E.P 1	10:12	.25	.70	1658.83	385	270	300		90	132		7.0
2		.28	.79	1660.76	390	270	305		78	132		8.2
3		.30	.85	1662.77	390	280	305		78	135		9.0
4		.31	.87	1664.77	390	290	315		78	135		9.1
5		.30	.85	1666.76	390	300	315		80	138		9.0
6		.32	.90	1668.78	390	300	310		80	138		9.5
7		.33	.93	1670.88	390	300	300		80	138		10.2
8		.33	.93	1673.02	390	300	300		80	140		10.8
9		.32	.90	1675.03	395	300	300		80	140		10.2
10		.31	.87	1677.05	395	300	300		72	140		10.0
11		.29	.82	1678.93	390	300	300		72	141		9.6
12		.20	.56	1680.528	—	300	300		72	142		7.0
Average		.300	.847	—	386	—						

METER CORR 1.0516

METER VOL. END 1680.528
START 1632.638
SAMPLE VOL. 50.361 ft^3 — CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.78" H_2O	29.60

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	148	-	100	=	48
#2	114	-	100	=	14
#3	0	-	0	=	0
				Total	62

#4	g(End)		g(Start)		Δgrams
Silica Gel	160	-	144.0	=	16

Total Vol. H_2O 78 ml

PARTICULATE

DATA

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 100.3%

Sampling Time Per Point, Min
3

TEST NUMBER 11
DATE 5-3-78
OPERATOR
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2,%	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
PORT 1		.29	.74	2266.94	600	220	320		60	90		5.5
		.29	.74	2268.87	600	290	350		50	90		5.5
		.24	.62	2270.61	610	340	360		62	92		5.0
		.22	.56	2272.30	600	350	380		53	92		4.8
PORT 2		.31	.77	2274.23	600	265	350		65	80		6.0
		.28	.72	2276.12	600	360	370		60	98		5.9
		.22	.56	2277.77	610	320	375		62	95		4.8
		.20	.52	2279.45	600	350	355		60	90		4.7
PORT #3		.31	.77	2282.05	620	240	365		78	90		6.4
		.30	.73	2283.84	640	290	370		65	90		6.2
		.17	.44	2285.31	620	325	365		70	90		4.5
		.07	.18	2286.29	610	300	390		80	89		2.1
PORT #4		.30	.73	2280.16	620	315	390		75	80		6.5
		.28	.72	2289.96	640	250	390		40	80		6.7
		.18	.46	2291.42	640	335	390		75	85		5.0
		.10	.26	2292.59	620	350	380		75	90		4.0
PORT #5		.29	.74	2294.53	620	215	360		90	90		7.7
		.23	.57	2296.18	630	360	370		45	90		6.3
		.21	.53	2297.80	620	300	350		70	78		6.3
		.16	.41	2299.31	580	340	375		65	90		5.7
PORT #6		.29	.74	2301.23	600	265	325		80	95		8.8
		.30	.73	2303.24	620	275	380		76	75		8.8
		.26	.65	2304.97	620	320	335		65	85		8.0
		.22	.56	2306.64	610	320	320		70	80		7.9
Average		.24	.60	—	613.7	—						—

METER VOL. END 2306.64
START 2264.98
SAMPLE VOL. 41.66 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837		29.50

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	140	100	40
#2	103	100	3
#3	1	0	1
		Total	44

#4	g(End)	g(Start)	Δgrams
Silica Gel	—	—	8

Total Vol. H_2O 52 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 98.1

TEST NUMBER 11
DATE 5-3-78
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
E-P 1	15:59	.24	.68	1687.82	400	310	300		90	120		4.2
2		.28	.79	1689.76	400	300	300		80	120		5.0
3		.30	.85	1691.75	405	300	300		75	122		5.5
4		.31	.87	1693.77	405	300	300		75	123		6.0
5		.31	.87	1695.76	405	300	300		78	125		6.0
6		.35	.99	1697.90	410	300	300		78	125		7.2
7		.35	.99	1700.03	410	300	300		80	128		7.3
8		.38	1.07	1702.27	410	300	300		80	130		8.6
9		.34	.96	1704.36	410	300	300		80	130		8.2
10		.33	.92	1706.39	410	300	300		80	132		8.1
11		.31	.87	1708.39	400	300	300		80	135		8.0
12		.18	.51	1709.07	—	300	300		80	137		5.5
N-P 1	17:00	.29	.82	—	400	265	280		90	140		8.0
2		.43	1.20	1714.11	410	280	280		78	140		11.2
3		.41	1.14	1716.34	410	290	280		72	140		11.2
4		.40	1.13	1718.53	410	295	290		78	140		11.9
5		.39	1.10	1720.70	410	300	290		78	140		11.8
6		.38	1.07	1722.85	410	300	300		80	142		11.8
7		.32	.90	1724.87	410	300	300		78	142		10.7
8		.29	.82	1726.76	410	300	300		73	145		9.5
9		.28	.79	1728.62	410	295	300		98	145		9.3
10		.26	.74	1730.46	410	295	300		70	145		9.2
11		.25	.70	1732.26	405	295	300		71	145		9.0
12		.20	.57	1733.805	—	295	300		72	145		8.2
Average		.315	.889	—	407	—	—	—	—	—	—	

METER CORR 1.0516

METER VOL. END 1733.805
START 1686.912

SAMPLE VOL. 50.259 ft^3 CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.86 "H_2O	29.50

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	150	-	100	=	50
#2	118	-	100	=	18
#3	0	-	0	=	0
				Total	

#4 Silica Gel	g(End)		g(Start)		Δgrams
	158	-	153	=	5

Total Vol. H_2O 73 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 100.8%

TEST NUMBER 12
DATE 5-4-78
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
PORT #6	10:28	.29	.72	2310.25	580	250	250		70	42		6.8
		.31	.77	2312.31	585	270	275		62	50		7.0
		.27	.67	2314.21	595	290	275		60	55		6.3
		.24	.59	2315.95	580	330	300		60	60		5.8
PORT #5		.28	.68	2317.84	600	250	300		70	62		6.7
		.24	.59	2319.61	600	250	300		60	63		6.2
		.21	.53	2321.32	600	290	310		61	63		5.9
		.19	.48	2322.88	580	300	300		62	62		5.3
PORT #4		.31	.77	2324.88	610	270	300		68	62		7.8
		.28	.68	2326.75	605	270	310		62	63		7.2
		.20	.49	2328.37	610	310	310		53	68		5.8
		.14	.34	2329.68	600	320	310		60	68		4.8
PORT #3	11:35	.32	.79	2331.70	605	280	300		70	68		8.5
		.30	.74	2333.65	615	285	310		62	69		8.2
		.22	.54	2335.35	610	300	315		62	72		6.8
		.09	.22	2336.45	—	310	315		62	72		4.0
PORT #2		.29	.73	2338.41	600	260	300		65	72		8.5
		.29	.73	2340.34	610	265	310		62	73		8.5
		.23	.57	2342.01	610	290	305		61	75		6.8
		.22	.54	2343.65	580	310	310		63	80		6.8
PORT #1		.32	.79	2345.62	600	240	300		72	81		8.7
		.27	.67	2347.46	600	270	300		65	82		8.0
		.26	.64	2349.24	600	300	300		65	82		7.9
	12:37	.22	.54	2350.888	585	310	310		68	82		7.2
		.249	.617	—	593.2	—	—	—	—	—	—	—
Average		↓	↓	—	↓	—	—	—	—	—	—	

METER VOL. END 2350.888
START 2307.975
SAMPLE VOL 42.913 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.81 "H_2O	29.42

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	140	-	100	=	40
#2	106	-	100	=	6
#3	0	-	0	=	0
				Total	46

#4	g(End)		g(Start)		Δgrams
Silica Gel	153.0	-	143.2	=	9.8
				Total Vol. H_2O	55.8ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 95.9%

TEST NUMBER 12
DATE 5-4-78
OPERATOR J. D.
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.27	.76	1743.19	390	280	395		70	115		5.3
2		.36	1.01	1745.55	390	280	300		70	115		7.8
3		.41	1.15	1748.23	390	290	305		75	115		11.1
4		.38	1.08	1750.45	390	295	310		72	115		8.1
5		.38	1.08	—	390	290	250		78	120		8.1
6		.40	1.12	1754.99	390	295	295		80	120		9.2
7		.32	.90	1757.06	390	295	310		80	120		7.8
8		.25	.70	1758.84	390	295	310		78	125		6.2
9		.28	.80	1769.76	390	295	315		80	125		7.3
10		.28	.80	1762.71	390	295	310		78	128		7.3
11		.26	.74	1764.59	280	290	315		80	130		7.2
12		.22	.62	1766.39	~~260~~	295	310		80	130		6.5
1		.22	.62	1768.09	400	190	250		100	130		—
2		.26	.74	1769.91	400	260	255		100	130		—
3		.32	.90	1772.97	400	280	260		85	130		9.0
4		.36	1.01	1774.21	400	295	280		80	128		11.6
5		.30	.85	1776.21	400	300	295		80	128		9.5
6		.38	1.08	1778.39	400	300	310		86	130		11.8
7		.34	.96	1780.46	400	300	320		80	130		11.0
8		.36	1.01	1782.59	400	300	320		85	130		12.1
9		.34	.96	1784.67	400	310	320		84	132		11.5
10		.30	.85	1786.64	400	310	320		85	132		10.8
11		.26	.74	1788.50	390	310	330		87	132		9.7
12		.19	.54	1790.13	~~220~~	310	325		87	135		8.0
Average		.31	.858	—	394							

51.39 CORR.
METER CORR
1.0516

METER VOL. END 1790.13
START 1741.26
SAMPLE VOL. 48.87 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.68" H_2O	29.42

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	152	100	52
#2	110	100	10
#3	0	0	0
		Total	62

#4	g(End)	g(Start)	Δgrams
Silica Gel	165.0	149	15
		Total Vol. H_2O	77 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3.0

ISOKINETICS = 102.6

TEST NUMBER 13
DATE 5-4-78
OPERATOR R.A.P.
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1	16:53	.28	.69	2353.29	580	250	250		80	55		5.9
		.28	.69	2355.24	590	300	275		62	55		6.1
		.27	.67	2357.16	600	320	285		59	55		6.2
		.23	.58	2358.92	585	320	295		59	57		5.8
PORT #2		.23	.58	2360.70	585	250	295		75	58		5.8
		.24	.60	2362.52	590	260	305		58	59		6.3
		.18	.44	2364.08	585	295	310		60	59		5.2
		.16	.39	2365.53	570	310	315		60	61		5.0
PORT #3		.23	.58	2367.32	585	250	285		80	62		6.8
		.22	.54	2369.03	600	250	315		62	65		7.1
		.15	.37	2370.43	600	285	315		67	65		5.5
		.09	.22	2371.53	580	310	320		68	68		4.3
PORT #4	17:52	.25	.63	2373.37	595	270	315		80	67		8.3
		.19	.48	2374.96	595	280	310		68	68		7.3
		.15	.37	2376.39	600	300	310		70	68		6.2
		.10	.24	2377.56	585	310	310		70	69		5.2
PORT #5		.28	.69	2379.47	590	250	270		82	69		9.5
		.21	.53	2381.19	590	275	270		70	70		8.5
		.17	.42	2382.68	580	300	275		68	70		7.2
		.17	.42	2384.22	—	320	270		70	70		7.2
PORT #6		.24	.59	2385.98	580	270	290		75	69		9.7
		.27	.67	2387.82	580	270	300		70	71		10.5
		.24	.59	2389.57	585	310	300		70	72		10.2
		.21	.53	2391.29	580	310	315		70	72		9.8
Average		.21	.52	39.965	587	—						

METER VOL. END 2391.290
START 2351.325
SAMPLE VOL. 39.965 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.79 "H_2O	29.42

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	139	100	39
#2	108	100	8
#3	2	0	2
		Total	

#4	g(End)	g(Start)	Δgrams
Silica Gel	150	142.5	7.5

Total Vol. H_2O 56.5 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 99.3

TEST NUMBER 13-
DATE 5-4-78
OPERATOR J. D.
FUEL
SITE MECH
PROBE LOCATION

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.22	.62	1813.57	390	250	310		90	135		8.3
2		.28	.79	1815.50	390	280	320		75	135		10.4
3		.34	.95	1817.56	400	300	320		75	135		13.0
4		.40	1.12	1819.63	400	300	325		75	135		13.8
5		.32	.90	1821.62	400	310	325		80	135		13.0
6		.34	.95	1823.63	400	310	330		80	138		14.0
7		.30	.85	1825.60	400	310	280		80	138		13.9
8		.28	.79	1827.56	400	230	290		85	139		13.0
9		.28	.79	1829.44	400	250	280		80	139		12.8
10		.22	.62	1831.11	400	280	280		80	140		10.5
11		.18	.50	1832.59	226	280	280		80	140		10.0
12		.27	.67	1834.96	280	290	280		80	140		12.2
1		.20	.56	1791.81	390	270	250		95	120		4.0
2		.26	.74	1793.69	390	285	235		85	120		5.2
3		.26	.74	1795.59	390	300	265		72	120		5.2
4		.32	.90	1797.66	395	310	285		70	120		7.0
5		.36	1.01	1799.88	400	310	295		78	122		8.5
6		.30	.85	1801.87	400	310	290		80	125		7.2
7		.32	.90	1804.93	400	300	285		80	127		8.2
8		.26	.74	1805.74	400	310	270		80	130		7.1
9		.26	.74	1807.60	395	310	275		80	130		8.0
10		.26	.56	1809.27	395	310	240		85	130		6.4
11		.14	.40	1810.58	215	310	290		90	130		5.2
12		.15	.42	1811.86	160	310	310		90	132		5.0
		.269	.75	44.74								
Average				47.048 CORR	396.7							

METER CORR 1.0516

METER VOL. END 1811.86
START 1790.22
SAMPLE VOL. 44.74 ft^3 = 47.048 CORR.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.70" H_2O	29.42

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	150	100	50
#2	108	100	8
#3	2	0	2
		Total	60

#4 Silica Gel	g(End)	g(Start)	Δgrams
	162	147.1	14.9

Total Vol. H_2O 74.9 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 103.2

TEST NUMBER 14
DATE 5-9-78
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1	14:09	.30	.74	2404.01	580	250	300		122	52		5.8
		.30	.74	2406.09	590	260	290		70	53		5.8
		.27	.67	2408.03	595	310	310		68	53		5.2
		.24	.59	2409.87	585	320	315		62	56		4.8
PORT #2		.28	.69	2411.83	590	250	300		78	53		5.3
		.28	.69	2413.78	590	270	305		62	53		5.4
		.23	.57	2415.54	595	300	300		62	62		4.8
		.25	.63	2417.42	595	310	310		65	62		5.3
PORT #3		.31	.77	2419.46	600	250	290		78	65		6.0
		.28	.69	2421.39	610	270	290		65	68		5.8
		.19	.48	2423.03	600	305	300		63	68		4.4
		.12	.30	2424.30	585	315	305		60	70		3.5
PORT #4		.33	.83	2426.46	595	295	310		70	70		6.8
	15:18	.27	.68	2428.37	600	295	310		62	71		5.8
		.19	.48	2430.03	610	315	315		63	71		4.8
		.13	.32	2431.38	590	320	315		65	71		3.8
PORT #5		.32	.79	2433.44	595	250	290		80	70		6.8
		.26	.64	2435.31	595	270	290		65	72		6.0
		.22	.54	2437.04	595	300	300		65	72		5.5
		.22	.54	2438.80	585	315	300		68	72		5.5
PORT #6		.29	.73	2440.76	585	250	275		78	78		6.8
		.26	.64	2442.58	590	270	280		—	78		6.2
		.24	.59	2444.33	590	300	290		68	78		6.0
		.21	.53	2446.050	585	310	300		—	80		5.8
Average		.25	.62	44.16	595							

METER VOL. END 2446.050
START 2401.895
SAMPLE VOL 44.16 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.60 "H_2O	29.

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nox(Ideal)=
% H_2O = Nox(Actual)= .312

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	137	100	37
#2	108	100	8
#3	3	0	3
		Total	0

#4	g(End)	g(Start)	Δgrams
Silica Gel	161.5	149.0	12.5

Total Vol. H_2O 60.5 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = 95.9

TEST NUMBER 14
DATE 5-9-78
OPERATOR JD
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.22	.62	1862.34	390	240	270		95	140		5.0
2		.30	.85	1864.35	390	245	230		82	140		6.3
3		.32	.90	1866.36	400	270	250		70	140		6.8
4		.34	.96	1868.40	390	285	260		75	140		7.2
5		.36	1.01	1870.55	390	290	290		75	140		8.6
6		.38	1.07	72.83	400	290	300		80	140		9.3
7		.38	1.07	1875.04	390	300	310		72	142		9.3
8		.38	1.07	1877.25	395	290	300		70	140		9.3
9		.36	1.01	1879.38	400	290	280		70	140		9.0
10		.32	.90	1881.35	400	290	280		75	145		8.2
11		.28	.79	1883.19	390	290	285		75	145		6.4
12		.36	.72	1885.96	320	290	285		78	148		—
1		.22	.62	1837.70	380	270	290		90	125		4.2
2		.34	.96	1840.84	380	275	290		83	125		6.1
3		.34	.96	1842.04	380	280	290		80	125		6.1
4		.40	1.12	1844.32	380	280	290		85	125		7.0
5		.40	1.12	1846.55	380	285	280		80	128		7.0
6		.40	1.12	1848.85	380	290	280		80	130		7.0
7		.33	.93	1850.98	380	290	275		82	130		6.2
8		.34	.96	1853.13	380	290	275		80	132		6.8
9		.32	.90	1855.19	380	290	275		80	134		6.5
10		.31	.87	1857.20	380	290	275		80	135		6.1
11		.38	.79	1859.08	380	290	275		80	138		5.6
12		.16	.45	1860.48	230	292	270		78	139		3.8
Average		.32	.90		390							

METER CORR. 1.0516

METER VOL. END 1885.96
START 1836.94
SAMPLE VOL 49.02 ft^3 — 51.55

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.85" H_2O	29.12

Percent O_2 =

Nomograph Setup

T_{meter} = C =
Pstack = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	150	-	100	=	50
#2	115	-	100	=	15
#3	3	-	0	=	3
				Total	

#4	g(End)		g(Start)		Δgrams
Silica Gel	167.2	-	145.3	=	16.9
				Total Vol. H_2O	84.9 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.0

Leak Check Rate

	Vac in. Hg	ft³/min
Before		
After		

ISOKINETICS = 106 %

TEST NUMBER 15
DATE 5-10-78
OPERATOR RAP
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
1	17:13	.32	.80	2453.08	585	250	240		100	78		6.8
2		.24	.61	2455.03	585	270	250		—	79		5.3
3		.23	.58	2456.83	595	300	250		68	78		5.2
4		.21	.54	2458.52	585	300	280		70	78		5.2
5		.24	.59	2460.29	590	260	290		80	77		5.5
6		.22	.54	2462.04	595	270	300		65	77		5.3
7		.20	.50	2463.65	595	300	300		63	73		4.8
8		.20	.50	2465.24	580	310	310		63	76		4.8
9		.30	.74	2467.20	600	270	300		72	73		6.8
10		.25	.62	2469.02	605	275	310		62	73		6.0
11		.17	.42	2470.48	605	310	310		62	72		4.8
12		.09	.22	2471.61	595	315	310		65	73		3.5
1	18:17	.29	.73	2473.53	595	285	320		73	72		6.8
2		.27	.67	2475.37	610	270	315		68	72		6.3
3		.17	.42	2476.90	600	305	315		68	72		4.8
4		.07	.175	2477.83	—	320	310		68	72		3.2
5		.30	.75	2479.80	590	250	300		80	71		7.5
6		.26	.65	2481.61	595	270	295		69	71		6.8
7		.22	.55	2483.30	595	300	300		69	71		5.8
8		.20	.50	2484.95	590	315	305		70	71		5.5
9		.28	.70	2486.87	585	280	290		80	70		7.2
10		.28	.70	2488.77	590	260	290		68	70		7.2
11		.25	.63	2490.58	590	300	300		62	70		6.8
12		.24	.60	2492.327	580	310	300		62	70		6.3
Average		.21	.57		590	—						

METER VOL. END 2492.327
START 2451.023
SAMPLE VOL. 41.304 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.65 "H_2O	29.47

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nox(Ideal)= .312
% H_2O = Nox(Actual)=
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	138	100	38
#2	111	100	11
#3	0	0	0
		Total	49

#4	g(End)	g(Start)	Δgrams
Silica Gel	153.4	143.1	10.3
		Total Vol. H_2O	59.3 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.0

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 97.6

TEST NUMBER 15
DATE 5-10-78
OPERATOR R.A.P
FUEL
SITE MECH
PROBE LOCATION C

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
E-P1	14:51	.23	.65	1887.13	390	250	300		105	130		6.2
2		.25	.71	1888.93	390	250	295		80	130		6.0
3		.29	.82	1890.91	390	270	295		88	130		7.0
4		.32	.90	1892.99	395	275	305		88	130		8.0
5		.33	.93	1895.11	390	290	310		88	132		8.3
6		.36	1.01	1897.29	395	300	310		88	132		9.2
7		.38	1.08	—	390	300	310		88	133		9.6
8		.38	1.08	1901.64	395	310	310		88	135		9.8
9		.36	1.01	1903.78	395	305	310		88	138		—
10		.29	.82	1905.71	390	305	310		85	140		7.8
11		.29	.82	1907.65	385	300	310		85	140		8.0
12		.24	.68	1909.44	—	300	310		88	142		6.7
N-Post 1		.28	.79	1911.38	395	260	270		100	145		7.8
2		.38	1.08	1913.51	395	270	280		80	145		10.5
3		.39	1.10	1915.68	395	280	290		80	145		11.0
4		.41	1.14	1917.96	400	290	290		80	145		12.0
5		.42	1.20	1920.31	395	300	290		79	148		12.4
6		.39	1.10	1922.46	395	300	295		79	148		11.3
7		.33	.93	1924.48	395	300	300		80	150		9.5
8		.31	.87	1926.44	400	300	310		79	150		9.3
9		.29	.82	1928.38	395	300	305		79	150		9.0
10		.28	.79	1930.21	395	300	305		79	152		8.3
11		.26	.74	1931.97	390	300	305		79	152		8.0
12		.20	.57	1933.542	—	300	300		80	152		6.7
Average		.32	.90	—	390							

METER VOL. END 1933.542
START 1885.34
SAMPLE VOL. 48.202 ft^3 = 50.69

METER CORR. 1.0514

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.64 H_2O	29.47

Percent O_2 =

Homograph Setup

T_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	149	100	49
#2	112	100	12
#3	2	0	2
		Total	63

#4	g(End)	g(Start)	Δgrams
Silica Gel	159.4	144.8	14.6
		Total Vol. H_2O	77.6 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.0

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 96.3%

TEST NUMBER 16
DATE 5-14-70
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION BURNS

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1	19:39	.32	.78	2501.42	590	240	240		118	100		5.8
		.30	.75	2503.36	600	270	250		72	100		5.8
		.30	.75	2505.29	610	310	260		68	100		5.8
		.24	.60	2507.02	590	320	280		65	100		4.8
PORT #2		.31	.78	2508.99	600	250	270		80	103		5.8
		.31	.78	2510.93	610	270	270		62	105		5.8
		.23	.57	2512.58	605	300	295		62	105		4.7
		.21	.52	2514.18	585	310	300		68	108		4.3
PORT #3		.32	.78	2515.20	610	250	280		80	108		5.7
		.28	.70	2518.06	610	260	300		68	108		5.2
		.17	.42	2519.51	610	295	295		70	110		3.8
4 min.		.09	.22	2520.90	—	300	310		72	110		2.8
PORT #4	20:45	.33	.82	2522.87	610	240	300		100	115		6.2
		.28	.69	2524.65	615	260	300		100	115		5.5
		.19	.48	2526.17	610	290	290		70	115		4.3
		.12	.27	2527.31	600	310	300		65	118		3.3
PORT #5		.31	.78	2529.21	610	250	300		78	118		6.0
		.26	.64	2530.94	615	290	310		63	118		5.2
		.22	.54	2532.50	605	340	315		63	118		4.8
		.21	.52	2534.07	595	350	325		63	120		4.7
PORT #6		.29	.73	2535.91	595	270	290		78	118		5.8
		.29	.73	2537.73	610	270	290		65	118		5.8
		.27	.67	2539.44	605	300	310		68	118		5.6
		.23	.57	2541.065	600	315	310		70	120		5.0
Average		.253	.628	41.630	604	—						

METER VOL. END 2541.065
START 2499.435
SAMPLE VOL. 41.630 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.94" H_2O	29.17

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	148	-	100	=	48
#2	8	-	100	=	8
#3	1	-	0	=	1
				Total	57

#4	g(End)		g(Start)		Δgrams
Silica Gel	153	-	144.5	=	8.5
				Total Vol. H_2O	65.5 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 97.8.

TEST NUMBER 16
DATE 5-11-78
OPERATOR JEC
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
1		.28	.79	1935.54	380	280	340		80	130		9
2		.38	1.08	1937.81	380	290	340		80	130		10
3		.35	.99	1939.95	390	300	340		80	130		10
4		.40	1.10	1942.30	390	300	350		80	130		11
5		.40	1.10	1944.50	390	300	350		80	130		11
6		.38	1.08	1946.65	390	300	350		80	130		10
7		.32	.90	1948.65	390	300	340		80	135		9
8		.30	.85	1950.60	390	300	350		80	135		9
9		.28	.79	1952.49	380	300	340		80	140		9
10		.28	.79	1954.39	380	270	340		80	140		8
11		.25	.71	1956.14	380	280	340		80	140		7
12		.20	.57	1957.67	~~280~~	260	340		80	140		6
1		.22	.62	1959.49	380	250	340		90	145		6
2		.30	.85	1961.39	390	260	320		90	140		9
3		.30	.85	1963.39	385	300	330		85	140		9
4		.32	.90	1965.39	390	320	340		90	145		10
5		.32	.90	1967.40	380	340	350		90	145		10
6		.35	.99	1969.45	390	350	350		90	145		11
7		.38	1.06	1971.59	385	340	350		95	146		13
8		.35	.99	1973.65	380	350	360		90	148		12
9		.32	.90	1975.65	385	345	360		90	148		11
10		.34	.96	1977.70	380	340	330		95	150		12
11		.30	.85	1979.64	380	340	340		95	150		11
12		.22	.62	1981.38	~~270~~	340	340		95	150		8
Average		.314	.885	—	384.7	—						

METER CORR 1.0516

METER VOL. END 1981.38
START 1933.64
SAMPLE VOL. 47.74 ft^3 → 50.203

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.70" H_2O	29.17

Percent O_2 =

Nomograph Setup

P_{meter} =
P_{stack} =
T_{meter} =
ΔH_g =
% H_2O =

C =
T_{stack} =
ΔP =
Noz(Ideal)=
Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	160	100	60
#2	116	100	16
#3	0	0	0
		Total	76

#4 Silica Gel	g(End)	g(Start)	Δgrams
	153.9	142.9	11

Total Vol. H_2O 87 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.0

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 94.6

TEST NUMBER 19
DATE 5-12-78
OPERATOR R. AP
FUEL
SITE C
PROBE LOCATION BLK MT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #6	14:23	.28	.69	2546.22	580	250	250		82	90		5.5
		.31	.78	2548.23	595	290	250		68	90		5.8
		.26	.64	2550.07	595	310	260		67	90		5.2
		.20	.49	2551.68	580	320	270		65	90		4.3
PORT #5		.31	.78	2553.68	595	260	255		75	95		5.8
		.28	.69	2555.51	605	270	270		65	95		5.3
		.22	.54	2555.98	600	300	290		62	98		4.7
		.20	.50	2557.43	—							
PORT #4		.32	.78	2559.38	610	250	290		73	102		5.9
		.27	.67	2561.17	620	270	300		62	102		5.3
		.19	.48	2562.69	615	300	300		62	102		4.3
		.12	.29	2563.90	585	320	310		65	102		3.3
PORT #3		.31	.78	2565.86	610	270	310		78	100		6.2
		.27	.67	2567.66	615	270	310		78	100		5.7
		.17	.42	2569.10	610	300	315		63	100		4.2
		.10	.24	2570.26	595	310	320		65	100		3.3
PORT #2		.30	.74	2572.18	600	260	310		68	98		6.2
		.28	.69	2573.98	605	275	312		78	99		5.8
		.23	.57	2575.68	605	300	310		62	99		5.2
		.21	.52	2577.32	595	315	310		63	99		4.9
PORT #1		.31	.78	2579.30	590	260	295		65	98		6.7
		.30	.74	2581.23	595	270	300		73	95		6.4
		.27	.67	2583.05	600	300	300		63	97		6.2
		.24	.59	2584.752	595	315	300		64	98		5.6
Average		.25	.62		600							

METER VOL. END 2584.752
START 2544.300
SAMPLE VOL. 40.45 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.85 "H_2O	29.19

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	143	-	100	=	43
#2	107	-	100	=	7
#3	1	-	0	=	1
				Total	51

#4	g(End)		g(Start)		Δgrams
Silica Gel	147	-	145	=	2
				Total Vol. H_2O	53 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = 98.6

TEST NUMBER 19

DATE 5-12-78

OPERATOR J. D.

FUEL

SITE C

PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.20	.57	1983.25	380	200	280		100	115		6.0
2		.24	.68	1985.04	380	290	290		78	115		7.2
3		.28	.79	1986.90	380	300	300		78	120		—
4		.30	.85	1988.92	380	310	310		75	120		10.0
5		.32	.90	1991.22	380	310	310		75	120		11.0
6		.36	1.01	1993.39	380	320	320		78	120		12.4
7		.33	.92	1995.46	380	315	320		80	120		11.2
8		.30	.85	1997.47	380	320	320		80	125		10.2
9		.32	.90	1999.51	380	320	330		80	128		—
10		.31	.87	2001.52	380	315	310		80	130		11.0
11		.30	.85	2003.52	380	315	310		80	130		10.5
12		.19	.54	2005.14	260	315	310		85	130		6.8
1		.20	.79	2007.01	380	240	300		85	135		9.1
2		.24	.90	2009.07	380	270	300		70	135		11.1
3		.28	1.07	2011.29	380	290	315		70	135		13.2
4		.30	1.12	2013.44	380	300	320		70	138		13.9
5		.32	1.07	2015.56	380	305	320		75	138		13.2
6		.36	1.07	2018.41	380	310	330		75	138		13.3
7		.34	.96	2020.32	380	315	330		85	140		11.8
8		.30	.85	2022.27	380	320	340		70	140		11.1
9		.30	.85	2024.23	380	320	340		70	142		11.7
10		.28	.74	2026.01	380	320	340		80	142		10.0
11		.24	.68	2027.66	380	320	330		75	142		8.7
12		.19	.54	2029.37	~~220~~	320	335		72	142		7.8
Average		.31	.85		380							

METER CORR 1.0516

METER VOL. END 2029.87 START 1981.32 -

SAMPLE VOL. 48.05 ft^3 — 50.529

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.62 H_2O	29.19

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .312

=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	160	100	60
#2	112	100	12
#3	0	0	0
		Total	72

#4 Silica Gel	g(End)	g(Start)	Δgrams
	160.0	145	15

Total Vol. H_2O 87 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 102.4

TEST NUMBER 20
DATE 5-13-78
OPERATOR R.AP
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1	9:17	.19	.47	2600.54	560	250	250		82	90		4.5
		.17	.42	2602.06	565	275	270		78	90		4.2
		.15	.39	2603.52	570	300	280		72	90		3.8
		.14	.37	2604.93	565	310	280		71	90		3.8
PORT #2		.17	.45	2606.48	560	260	295		80	95		4.3
		.15	.39	2607.92	570	280	310		70	95		4.2
		.12	.32	2609.27	570	300	315		72	98		3.6
		.13	.34	2610.60	565	310	310		68	98		3.8
PORT #3		.20	.53	2612.28	565	255	280		77	100		5.0
		.16	.42	2613.73	575	265	290		63	100		4.3
		.11	.29	2614.94	580	295	295		62	100		3.3
		.07	.185	2615.92	570	310	310		68	102		2.8
PORT #4	4.0 min	.17	.45	2617.95	560	290	300		75	102		4.3
		.16	.42	2619.41	580	290	300		67	103		4.0
		.09	.22	2620.49	580	300	310		67	103		3.2
		.07	.185	2621.43	570	320	310		70	103		2.8
PORT #5		.17	.45	2622.94	570	250	300		80	100		4.3
		.15	.39	2624.46	580	260	300		60	110		4.5
		.13	.34	2625.74	580	295	300		61	110		3.8
		.12	.32	2627.02	565	315	300		62	108		3.8
PORT #6		.15	.39	2628.42	570	270	285		78	108		4.0
		.17	.45	2629.90	570	280	295		65	108		4.5
		.15	.39	2631.30	570	310	300		65	108		4.0
		.13	.34	2632.595	570	320	300		66	109		3.8
Average		.14	.37		570	—	—	—	—	—	—	—

METER VOL. END 2632.595
START 2598.894
SAMPLE VOL. 32.701 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.50" H_2O	29.05

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nox(Ideal)=
% H_2O = Nox(Actual)= .312

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	126	100	26
#2	102	100	2
#3	0	0	0
		Total	28

#4	g(End)	g(Start)	Δgrams
Silica Gel	155.9	145	11
		Total Vol. H_2O	39 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 98.5%

TEST NUMBER 20
DATE 5-13-78
OPERATOR JEC
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.12	.34	2031.15	385	300	320		80	120		2.5
2		.15	.44	2032.57	390	310	330		80	120		4.5
3		.17	.48	2034.14	390	320	330		80	120		5
4		.19	.54	2035.68	390	330	340		80	120		5.5
5		.21	.60	2037.47	390	330	340		80	123		6
6		.21	.60	2039.21	390	330	340		80	125		6
7		.23	.65	2040.90	390	340	350		80	128		6.5
8		.22	.62	2042.64	390	340	350		80	130		7
9		.21	.60	2044.40	390	350	345		75	130		6.5
10		.20	.57	2045.97	390	350	340		78	132		6
11		.19	.54	2047.07	380	350	345		75	133		6
12		.14	.39	2048.92	250	350	340		80	135		4
1		.18	.57	2050.49	390	280	330		80	138		5
2		.19	.54	2052.12	390	260	330		80	138		6
3		.19	.54	2053.65	390	300	330		80	138		6
4		.20	.57	2055.35	390	320	340		80	140		6
5		.22	.62	2056.98	390	330	340		80	140		7
6		.23	.65	2058.67	390	340	345		80	140		7.5
7		.26	.73	2060.57	395	340	350		80	143		8
8		.25	.71	2062.38	390	340	350		80	145		8
9		.25	.71	2064.15	390	340	350		80	145		8
10		.20	.57	2065.68	390	330	350		85	148		7
11		.19	.54	2067.35	380	330	350		90	148		6
12		.15	.44	2068.65	250	320	350		90	150		5.5
Average		.198	.585	—	377							

METER CORR = 1.0516

METER VOL. END 2068.65
START 2029.78
SAMPLE VOL. 40.876 = CORR.

$C_{p:tot}$	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.78" H_2O	29.05

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal) =
% H_2O = Noz(Actual) = .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	139	100	39
#2	107	100	7
#3	5	0	5
		Total	51

#4	g(End)	g(Start)	Δgrams
Silica Gel	158.4	147.0	11.4
		Total Vol. H_2O	62.4 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 105.5

TEST NUMBER 23
DATE 5-17-78
OPERATOR JD
FUEL
SITE C
PROBE LOCATION BLROUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter	O_2, %	Vac.
PORT #6		.41	1.1	2641.36	600	200	240		110	70		9.0
		.37	.97	2643.56	600	240	290		105	70		8.0
		.39	1.0	2645.83	620	320	300		60	70		8.3
		.34	.87	2642.96	620	320	310		60	70		7.5
PORT #5		.45	1.15	2650.36	620	250	300		70	70		9.3
		.37	.97	2652.48	610	280	350		70	80		8.0
		.32	.85	2654.49	610	300	350		70	89		7.1
		.32	.85	2656.53	620	335	365		65	90		7.2
PORT #4		.42	1.08	2658.28	620	260	350		75	90		8.9
		.37	.97	2660.95	630	280	335		70	95		8.0
		.25	.65	2662.72	620	310	355		70	98		5.9
		.20	.52	2664.38	620	330	360		75	100		5.0
PORT #3		.46	1.19	2666.52	620	300	375		80	100		9.4
		.38	.99	2668.65	620	290	380		80	105		8.1
		.26	.67	2670.53	620	325	390		75	105		6.0
		.18	.46	2672.06	610	340	395		75	110		4.2
PORT #2		.43	1.1	2674.31	620	235	380		82	110		9.8
		.39	1.0	2676.45	620	280	390		85	110		8.4
		.31	.80	2678.36	620	310	390		85	115		6.5
		.30	.78	2680.31	620	330	400		80	115		6.4
PORT #1		.37	.97	2682.47	620	270	390		89	119		7.8
		.42	1.08	2684.69	620	290	400		89	119		9.9
		.35	.90	2686.80	620	310	410		85	120		7.2
		.35	.90	2689.21	620	340	410		89	120		7.2
Average		.35	.91	—	617		—				—	

METER VOL. END 2689.21
START 2638.90
SAMPLE VOL. 50.31 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.85 H_2O	29.58

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	190	100	90
#2	113	100	13
#3	0	0	0
		Total	103

#4	g(End)	g(Start)	Δgrams
Silica Gel	161.9	147.3	14.6

Total Vol. H_2O 117.6 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 104 %

TEST NUMBER 23
DATE 5-17-78
OPERATOR R.AP
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
E-1	9:49	.32	.90	2070.89	390	280	300		110	115		9.5
2		.40	1.12	2073.26	390	285	290		90	115		10.0
3		.46	1.30	2075.64	395	285	300		95	120		12.0
4		.46	1.30	2078.19	395	290	300		82	120		12.2
5		.49	1.38	2080.61	390	300	305		82	122		12.5
6		.51	1.35	2083.14	395	290	310		92	122		12.5
7		.49	1.35	2085.54	395	295	305		88	125		12.5
8		.44	1.24	2088.06	395	290	305		92	128		12.0
9		.45	1.27	2090.44	390	285	310		88	128		12.0
10		.42	1.18	2092.69	390	285	310		88	130		11.4
11		.39	1.10	2094.92	390	285	300		90	130		11.0
12		.24	.68	2096.64	—	285	300		98	135		6.3
N-1		.44	1.24	2099.04	395	240	280		95	140		11.5
2		.51	1.35	2101.46	400	250	285		78	140		12.5
3		.56	1.35	2103.81	400	270	290		75	140		12.5
4		.57	1.35	2106.36	400	275	295		75	142		12.5
5		.58	1.35	2108.77	400	280	300		75	143		12.5
6		.58	1.35	2111.34	400	280	300		80	145		12.5
7		.44	1.24	2113.62	400	280	310		78	147		12.5
8		.42	1.19	2115.90	400	280	310		78	147		12.3
9		.37	1.05	2118.10	400	290	310		78	150		11.4
10		.37	1.05	2120.27	400	290	310		78	151		10.2
11		.34	.96	2122.39	400	290	310		78	151		10.0
12		.24	.68	2123.933	—	290	310		80	152		9.2
Average		.413	1.18	—	396							

METER VOL. END 2123.933 METER 1.0516
START 2068.752
SAMPLE VOL 58.028 - CORR.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.69 "H_2O	29.58

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= 312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	207	100	107
#2	134	100	34
#3	3	0	3
		Total	144

#4	g(End)	g(Start)	Δgrams
Silica Gel	161	143	18
		Total Vol. H_2O	162 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft³/min
Before		
After		

ISOKINETICS = 101.5

TEST NUMBER 24
DATE 5-18-78
OPERATOR J.D.
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
PORT #1		.42	.96	2691.36	620	250	230		90	70		7.0
		.42	.96	2693.44		320	240		70	80		7.0
		.37	.89	2695.58		360	280		70	85		6.4
		.32	.65	2697.43		380	360		70	90		5.2
PORT #2		.41	.95	—		290	300		75	90		6.9
		.37	.89	2702.17		320	320		70	90		6.6
		.30	.70	2703.94		350	385		78	95		5.5
		.31	.73	2705.83		375	350		75	98		5.8
PORT #3		.42	.96	2707.94		285	355		75	100		7.5
		.36	.84	2709.96	620	300	370		75	100		6.2
		.24	.55	2711.62	620	350	375		75	100		4.6
		.14	.32	2712.91	—	370	380		80	105		3.6
PORT #4		.43	1.0	2715.36	630	270	360		75	105		7.2
		.35	.80	2717.33	640	300	360		80	105		6.0
		.22	.50	2719.16	640	350	380		80	105		4.3
		.13	.30	2720.31	600	380	390		80	107		3.6
PORT #5		.45	.96	2722.42	620	225	375		85	110		7.2
		.40	.95	2724.49		320	380		70	110		6.8
		.30	.70	2726.41		360	385		70	112		5.9
		.29	.67	2728.16		385	385		72	112		5.2
PORT #6		.41	.95	2730.26		270	360		85	112		6.9
		.42	.96	2732.34		300	370		72	112		7.0
		.37	.89	2734.40		365	380		70	112		6.5
		.30	.70	2736.21		390	390		75	112		5.5
Average		.338	.78	46.92	620							

METER VOL. END 2736.21
START 2689.29
SAMPLE VOL. 46.92 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.95 H_2O	29.62

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	189	100	89
#2	113	100	13
#3	0	0	0
		Total	102

#4	g(End)	g(Start)	Δgrams
Silica Gel	164.4	144	20

Total Vol. H_2O 122 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft³/min — Before — After

Sampling Time Per Point, Min
3

ISOKINETICS = 95.2 / 101.2

TEST NUMBER 24
DATE 5-18-78
OPERATOR R.AP
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
N-1	.312	.44	1.15	2126.47	380	240	270		88	125		13.0
2		.52	1.35	2128.750	385	270	275		75	125		13.2
3	.249	.58	.71	2130.59	385	240	290		100	130		7.8
4		.59	.72	2132.45	385	265	295		78	130		7.5
5		.61	.74	2134.28	385	290	300		80	130		7.8
6		.57	.69	2136.00	385	300	300		80	130		7.5
7		.42	.51	2137.48	385	310	310		80	133		5.4
8		.41	.49	2138.88	385	305	305		78	135		5.2
9		.37	.47	2140.34	385	305	305		78	138		5.0
10		.36	.43	2141.64	385	300	300		79	140		4.9
11		.32	.38	2142.93	385	300	300		78	140		4.4
12		.20	.24	2143.972	—	300	300		80	143		3.3
E-1		.39	.47	2145.44	385		280		98	150		5.3
2		.44	.53	2147.90	390		300		98	150		5.8
3		.46	.56	2148.49	390		300		90	150		6.2
4		.46	.56	2150.00	390		295		89	150		6.2
5		.48	.58	2151.55	390		295		90	152		6.3
6		.54	.65	2153.39	390		290		90	155		7.2
7		.49	.59	2154.74	390		295		90	155		6.3
8		.47	.57	2156.34	390		300		90	155		6.3
9		.42	.51	2157.7	390		295		90	158		5.8
10		.40	.48	2159.11	390		300		92	160		5.0
11		.38	.46	2160.34	385		300		90	160		4.4
12		.23	.27	2161.357	—		300		90	161		3.5
Average		.48 / .44	.587	—	382 / 387							

Nomograph Setup METER CORR — 1.0516

METER VOL. END 2128.750 START 2124.128 — 2161.357 / 2128.750 / 34.289 CORR

SAMPLE VOL. 4.627 ft³ - 4.86

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.71 H_2O	29.62

Percent O_2 =

P_{stack} = C = T_{stack} =
T_{meter} = ΔP =
ΔHg = N_{O2}(Ideal)=
% H_2O = N_{O2}(Actual)= .312
= .249

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	184	100	84
#2	111	100	11
#3	0	0	0
Total			95

	g(End)	g(Start)	Δgrams
Silica Gel	154	147	7

Total Vol. H_2O 102 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = 100.4

TEST NUMBER 25
DATE 5-19-78
OPERATOR J. D.
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2,%	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
PORT #6		.22	.50	2740.39	610	240	230		120	80		4.8
		.22	.50	2742.32		290	240		78	85		4.8
		.19	.44	2743.74		350	250		75	85		4.0
		.16	.37	2745.08		370	270		75	90		3.8
PORT #5		.24	.55	2746.71		285	260		80	85		5.0
		.21	.49	2748.20		300	270		75	90		4.4
		.18	.42	2749.63		340	290		75	90		4.2
		.17	.40	2751.01		360	295		80	90		3.9
PORT #4		.24	.55	2752.62		310	285		90	90		4.9
		.21	.49	2754.11		300	290		80	95		4.3
		.12	.28	2755.32		340	300		80	95		2.5
		.06	.14	2756.17		360	310		80	95		1.6
PORT #3		.24	.55	2757.78		370	320		92	96		5.0
		.20	.46	2559.26		240	320		72	90		4.7
		.13	.30	2760.42		340	325		72	90		3.7
		.07	.16	2761.44		360	330		78	95		1.9
PORT #2		.25	.56	2763.09		270	300		80	100		5.2
		.22	.50	2764.88		300	305		72	92		4.8
		.17	.40	2766.24		345	300		72	95		4.0
		.16	.37	2767.56		365	310		72	95		4.0
PORT #1		.24	.50	2769.14		320	300		80	98		4.9
		.21	.49	2770.57		325	300		75	100		4.4
		.18	.44	2772.02		355	310		75	100		4.2
		.18	.44	2773.473		380	310		72	95		4.3
Average		.19	.42		610							

METER VOL. END 2773.473
START 2738.30
SAMPLE VOL. 35.173

C_{pitot}	Stack Press. In. Hg Gauge	Barometric Pressure
.837	-.68 H_2O	29.70

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	170	100	70
#2	108	100	8
#3	1	0	1
		Total	79

#4	g(End)	g(Start)	Δgrams
Silica Gel	153.4	145.3	8.1
		Total Vol. H_2O	87.1 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 103 %

TEST NUMBER 25
DATE 5-19-78
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
E-1	10:55	.19	.23	2166.06	385	240	250		115	122		3.3
2		.24	.29	2167.24	385	240	280		92	125		3.5
3		.25	.30	2168.41	385	270	300		88	125		3.7
4		.26	.31	2169.56	385	280	300		87	125		3.8
5		.26	.31	2171.71	390	285	300		87	128		3.8
6		.29	.35	2172.07	390	285	300		88	130		4.3
7		.31	.37	2173.40	390	295	300		88	132		4.4
8		.31	.37	2174.63	390	295	295		88	133		4.4
9		.32	.38	2175.93	390	300	300		88	138		4.4
10		.29	.35	2177.24	390	300	300		88	140		4.2
11		.25	.30	2178.36	385	305	310		88	142		3.6
12		.15	.18	2179.18	—	300	300		88	142		2.3
N-1		.23	.27	2180.30	390	260	280		110	145		3.5
2		.27	.32	2181.47	390	280	280		85	148		3.8
3		.29	.35	2182.67	395	285	285		80	150		4.3
4		.32	.38	2183.96	390	290	295		80	150		4.4
5		.33	.40	2185.31	395	290	300		80	150		4.6
6		.34	.41	2186.62	395	295	300		79	153		5.4
7		.31	.37	2187.84	395	295	300		79	153		4.3
8		.30	.36	2189.10	395	295	310		78	155		4.2
9		.27	.32	2190.29	395	300	300		75	157		3.8
10		.28	.34	2191.43	390	295	300		78	158		4.0
11		.26	.31	2192.53	390	295	300		78	159		3.8
12		.18	.21	2193.473	—	295	300		79	160		3.0
Average		.27	.32	—	372	—	—	—	—	—	—	

METER CORR 1.0516

METER VOL. END 2193.473
START 2164.900
SAMPLE VOL. 30.047 — CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.68 H_2O	29.70

Percent O_2 =

Homograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .249
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	168	100	68
#2	106	100	6
#3	1	0	1
		Total	75

#4	g(End)	g(Start)	Δgrams
Silica Gel	148.3	141.6	6.7
		Total Vol. H_2O	81.7 ml

PARTICULATE

DATA

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

Sampling Time Per Point, Min
3

ISOKINETICS = 103.5

TEST NUMBER 26
DATE 5-24-78
OPERATOR SU + RAP
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1		.44	1.03	2804.62	630	245	300		78	88		7.3
		.37	.92	2806.82	630	300	310		65	88		6.9
		.23	.55	2808.48	620	335	315		69	91		4.2
		.17	.38	2809.62	590	348	320		72	95		1.9
PORT #2		.43	1.00	2811.88	630	270	295		80	100		6.9
		.36	.84	2813.91	630	290	305		70	102		6.0
		.29	.67	2815.73	—	340	310		70	105		4.9
		.29	.67	2817.46	—	355	320		69	109		4.9
PORT #3		.38	.88	2819.49	630	262	299		80	111		6.0
		.38	.88	2821.38	630	260	305		80	113		5.2
		.35	.83	2823.33	—	325	315		71	115		5.8
		.30	.70	2825.19	—	352	320		72	115		5.0
PORT #4		.43	1.0	2778.97	—	250	260		—	62		—
		.42	.97	2781.27	—	300	270		72	62		8.0
		.36	.84	2783.49	—	330	280		70	67		6.9
		.32	.75	2785.54	620	330	290		72	70		6.0
PORT #5		.41	.95	2787.87	620	260	270		78	71		7.0
		.37	.92	2789.11	625	280	270		65	72		6.9
		.36	.85	2792.46	625	330	295		60	75		6.5
		.31	.74	2794.47	—	340	300		60	75		5.5
PORT #6		.42	.97	2796.81	630	260	280		72	79		6.9
		.38	.88	2798.97	630	290	285		62	80		6.5
		.23	.53	2800.81	630	330	295		63	82		5.0
		.16	.37	2802.28	—	340	300		68	85		3.5
Average		.34	.80	—	625							

METER VOL. END 2825.190
START 2776.575
SAMPLE VOL. 48.615 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.5 "H_2O	29.52

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	182	100	82
#2	13	100	13
#3	1	0	1
		Total	96

#4	g(End)	g(Start)	Δgrams
Silica Gel	160.1	146.2	13.9

Total Vol. H_2O 109.9 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 106%

TEST NUMBER 26

DATE 5-24-78

OPERATOR JD

FUEL

SITE C

PROBE LOCATION MECH

Sampling Time Per Point, Min
3

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
N-1		.39	.47	2203.29	380	290	305		85	120		4.7
2		.42	.51	2204.84	380	290	310		80	120		4.9
3		.43	.52	2206.50	380	290	320		80	120		5.0
4		.60	.73	2207.79	385	290	320		80	122		—
5		.56	.68	2209.57	380	295	320		75	125		6.0
6		.50	.61	2211.33	380	300	320		75	125		5.4
7		.42	.51	2212.83	380	300	320		78	130		5.0
8		.39	.47	2214.39	380	300	320		75	130		4.7
9		.36	.43	2215.80	380	300	315		75	130		4.0
10		.34	.41	2217.27	385	300	320		80	130		3.9
11		.34	.41	2218.59	300	300	320		75	135		3.9
12		.20	.24	2220.91	—	300	320		75	135		2.0
E-1		.32	.39	2221.32	380	230	280		100	140		3.9
2		.40	.48	2222.83	385	260	250		90	140		4.5
3		.46	.56	2224.47	385	280	300		85	140		5.2
4		.48	.58	2226.09	380	285	305		85	140		5.4
5		.50	.61	2227.74	380	290	310		85	140		6.0
6		.50	.61	2229.48	380	290	320		87	140		6.0
7		.42	.51	2231.06	380	300	320		90	140		4.2
8		.46	.56	2232.62	380	305	320		90	140		—
9		.34	.47	2234.15	380	310	320		90	140		4.8
10		.34	.41	2235.49	380	310	320		90	140		4.0
11		.36	.43	2236.85	360	310	320		95	142		4.3
12		.22	.26	2238.01	—	310	330		95	142		2.3
Average		.406	.494	—	383							

METER CORR - 1.0576

METER VOL. END 2238.01

START 2201.68

SAMPLE VOL. 38.204 ft³ CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	.81" H_2O	29.52

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .249

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	176	100	76
#2	105	100	5
#3	0	0	0
		Total	81

#4	g(End)	g(Start)	Δgrams
Silica Gel	155.8	145.0	10.8

Total Vol. H_2O 91.8 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 99.4%

TEST NUMBER 27
DATE 5-24-78
OPERATOR SU, JD
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1		.41	.95	2826.98	620	270	335		90	88		7.5
		.41	.95	2829.18	620	315	345		71	90		7.0
		.37	.87	2831.28	630	365	355		74	91		6.5
		.32	.74	2833.25	—	395	360		79	92		5.9
PORT #2		.42	.98	2835.48	630	264	350		82	99		7.2
		.39	.92	2837.63	640	270	345		78	100		7.0
		.31	.72	2839.56	630	360	350		79	107		5.5
		.26	.61	2841.28	—	390	360		80	102		4.9
PORT #3		.40	.93	2843.38	—	290	330		92	108		6.9
		.35	.82	2845.33	—	320	340		80	109		6.0
		.22	.51	2846.87	—	380	340		82	110		4.1
		.13	.30	2848.07	—	400	350		89	110		3.0
PORT #4		.44	1.02	2850.55		312	335		92	110		7.5
		.42	.98	2852.66		340	340		88	110		7.3
		.22	.51	2854.29		380	345		90	112		4.2
		.11	.25	2855.37		400	350		95	110		1.8
PORT #5		.40	.93	2857.49		260	330		100	112		7.0
		.37	.87	2859.54		310	330		100	112		6.5
		.28	.65	2861.20		375	340		100	115		4.6
		.28	.65	2862.89		410	348		100	118		5.0
PORT #6		.36	.84	2864.94		335	331		102	119		6.1
		.29	.68	2866.69		360	335		102	118		5.0
		.29	.68	2868.55		388	340		102	116		5.1
		.27	.63	2870.32		410	349		102	116		—
Average		.32	.75	—	628	—	—	—	—	—	—	—

METER VOL. END 2870.32
START 2825.21
SAMPLE VOL. 45.11 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.2" H_2O	29.55

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .312
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	170	100	70
#2	113	100	13
#3	1	1	1
		Total	84

#4	g(End)	g(Start)	Δgrams
Silica Gel	167.5	146.6	20.9
		Total Vol. H_2O	104.9 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 102.7

TEST NUMBER 27
DATE 5-24-78
OPERATOR R.A.P.
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
E-1	11:33	.33	.40	2239.42	385	220	280		118	120		3.7
2		.38	.46	2240.84	390	240	310		100	122		4.8
3		.41	.50	2242.43	390	270	320		115	128		5.2
4		.45	.54	2244.05	390	280	310		98	128		5.8
5		.47	.57	2245.73	390	295	295		98	130		5.9
6		.49	.59	2247.43	395	295	300		101	130		6.0
7		.47	.57	2248.90	395	300	300			130		5.8
8		.46	.55	2250.49	390	300	310			133		5.6
9		.45	.54	2252.06	395	310	305			135		5.6
10		.42	.51	2253.54	395	310	310			138		5.3
11		.36	.43	2255.95	385	310	310			140		4.9
12		.24	.29	2256.08	—	310	310			142		5.3
N-1	12:36	.42	.51	2257.56	395	260	300			147		5.5
2		.49	.59	2259.24	39	280	305			147		6.3
3		.51	.62	2260.79	39	290	305			148		6.5
4		.56	.68	2262.52	395	300	305			149		7.0
5		.58	.71	2264.32	395	305	310			149		7.3
6		.57	.69	2266.01	395	310	310			150		7.2
7		.53	.63	2267.63	395	310	310			150		6.8
8		.42	.51	2269.14	395	305	310			152		5.3
9		.42	.51	2270.54	395	305	310			152		5.3
10		.31	.37	2271.80	390	300	305			153		4.3
11		.28	.34	2273.08	385	300	300			157		4.2
12		.21	.25	2274.112	—	295	300			157		3.3
Average		0.426	0.518	37.807 CORR.	392							

METER CORR 1.0516

METER VOL. END 2274.112
START 2238.160
SAMPLE VOL 37.807 ft^3 CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-1.2	29.55

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .249
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	162	100	62
#2	113	100	13
#3	0	0	0
		Total	75

#4 Silica Gel	g(End)	g(Start)	Δgrams
	161	145	16
		Total Vol. H_2O	91 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft³/min
Before		
After		

ISOKINETICS = 93 %

TEST NUMBER 28
DATE 5-25-78
OPERATOR SO + JO
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
PORT 1		.43	1.00	2873.92		330	210		80	90		7.0
		.36	.84	2875.98		375	240		70	91		6.0
		.28	.65	2877.88		400	275		70	95		5.0
		.28	.65	2879.68		380	300		70	98		5.0
PORT #2		.47	1.09	2882.94		250	280		84	103		8.0
		.36	.84	2883.93		315	300		70	108		6.0
		.28	.65	2885.70		340	325		70	110		5.0
		.27	.63	2887.44		340	350		72	110		4.9
PORT #3		.48	1.11	2889.66		275	330		85	115		8.0
		.38	.88	2891.63		315	340		75	115		5.8
		.24	.55	2893.25		365	340		73	120		4.1
		.13	.30	2894.42		390	339		78	120		2.0
PORT #4		.46	1.06	2896.67		330	330		82	122		7.3
		.39	.90	2898.71		290	322		72	122		6.4
		.25	.58	2900.36		320	325		78	122		4.1
		.14	.31	2901.57		340	325		80	125		2.0
PORT #5		.48	1.11	2903.78	620	280	310		90	130		7.3
		.39	.90	2905.73	620	290	315		78	130		6.3
		.33	.77	2907.60	640	345	320		80	130		5.5
		.20	.46	2909.01	—	360	330		82	131		3.9
PORT #6		.44	1.01	2911.16	660	280	310		110	135		6.9
		.35	.82	2913.00	650	300	310		110	135		5.8
		.34	.80	2914.88	650	335	315		110	135		5.8
		.32	.73	2916.62	—	360	320		112	140		5.1
Average		.34	.78	—	640	—						

METER VOL. END 2916.62
START 2871.20
SAMPLE VOL. 45.42 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.2 "H_2O	29.60

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .318
=

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	168	-	100	=	68
#2	110	-	100	=	10
#3	1	-	0	=	1
				Total	79

#4	g(End)		g(Start)		Δgrams
Silica Gel	160.5	-	144.5	=	16
				Total Vol. H_2O	95 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = 102.7

TEST NUMBER 28

DATE 5-25-78

OPERATOR R.AP

FUEL

SITE C

PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
N-1	10:53	.37	.45	2284.39	395	270	320			122		4.0
2		.49	.59	2286.01	395	280	320			120		4.8
3		.53	.64	2287.75	395	280	315			128		5.3
4		.56	.68	2289.48	395	285	310			130		5.4
5		.57	.69	2291.27	395	300	310			132		5.7
6		.59	.72	2293.03	395	300	300			132		5.8
7		.49	.59	2294.58	400	300	300			135		4.8
8		.48	.58	2296.26	400	300	310			138		4.8
9		.42	.51	2297.67	400	300	310			139		4.3
10		.43	.52	2299.21	400	300	300			140		4.3
11		.37	.45	2300.53	395	300	300			140		4.0
12		.25	.30	2301.642	—	300	300			145		2.8
E-1	11:44	.39	.47	2303.09	400	265	285			151		4.0
2		.43	.52	2304.54	400	310	295			151		4.3
3		.48	.58	2306.11	405	310	300			152		4.6
4		.53	.64	2307.68	400	295	305			152		5.2
5		.56	.68	2309.42	405	290	300			155		5.8
6		.56	.68	2311.13	405	290	300			155		5.8
7		.56	.68	2312.75	405	290	300			158		5.8
8		.53	.64	2314.46	405	290	300			159		5.6
9		.48	.58	2315.90	400	300	300			160		4.8
10		.46	.56	2317.46	400	300	300			162		4.9
11		.40	.48	2318.80	395	300	305			162		4.3
12		.25	.30	2319.901	—	290	300			162		3.0
Average		.47	.56	—	399	—	—	—	—	—	—	—

METER CORR - 1.0516

METER VOL. END 2319.901

START 2282.845

SAMPLE VOL. 38.96 ft³ CORR.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.80 in H_2O	29.65

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔHg = Noz(Ideal)=

% H_2O = Noz(Actual)= .249

=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	175	100	75
#2	113	100	13
#3	2	0	2
		Total	

#4 Silica Gel	g(End)	g(Start)	Δgrams
	150	140	10

Total Vol. H_2O 100 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 92.2 %

TEST NUMBER 29
DATE 5-26-78
OPERATOR RAP
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #6		.39	.88	2919.06		250	250		100	90		8.5
		.42	.97	2921.245		295	270		98	90		8.8
		.37	.86	2923.27		330	295		90	90		7.8
		.31	.72	2925.11		330	300		78	92		6.7
PORT #5		.45	1.08	2927.34	635	280	290		82	98		9.2
		.38	.88	2929.37	635	290	300		70	98		8.0
		.31	.73	2931.22	635	320	300		70	99		7.0
		.32	.75	2933.03	—	330	300		70	100		6.8
PORT #4		.46	1.08	2935.21	635	275	290		88	103		9.2
		.37	.85	2937.19	638	285	305		80	105		7.8
		.25	.57	2938.75	638	320	305		80	106		5.5
		.19	.44	2940.18	—	330	310		80	108		4.5
PORT #3		.44	.98	2942.26	640	290	310		82	110		8.8
		.38	.86	2944.21	640	290	310		72	111		7.8
		.25	.57	2945.76	640	320	315		73	112		5.2
		.17	.38	2947.06	—	330	315		72	113		4.2
PORT #2		.42	.95	2949.10	620	270	310		82	116		8.2
		.40	.90	2951.07	630	280	310		68	118		7.8
		.32	.72	2952.84	630	320	315		65	119		6.3
		.33	.75	2954.63	—	320	315		70	119		6.3
PORT #1		.42	.95	2956.72	630	240	260		110	119		7.8
		.34	.76	2958.56	630	290	240		—	120		6.7
		.26	.58	2960.17	630	320	260		—	120		5.3
		.37	.84	2962.078	—	320	260		—	121		7.2
Average		.35	.79	—	634							

METER VOL. END 2962.078
START 2916.938
SAMPLE VOL. 45.14 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.68" H_2O	29.64

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .318
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	185	-	100	=	85
#2	112	-	100	=	12
#3	0	-	0	=	0
				Total	97

#4 Silica Gel	g(End)		g(Start)		Δgrams
	155.3	-	143.7	=	11.6

Total Vol. H_2O 108.6 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 106 %

TEST NUMBER 29
DATE 5-26-78
OPERATOR JD
FUEL
SITE C
PROBE LOCATION MECA

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.34	.41	2331.27	390	290	290		100	125		4.7
2		.39	.47	2332.68	390	300	290		95	125		4.9
3		.40	.48	2334.21	390	300	290		90	130		4.9
4		.46	.55	2335.24	390	305	300		90	130		5.4
5		.44	.53	2337.39	390	310	300		90	130		5.3
6		.52	.63	2338.22	390	305	305		90	132		6.2
7		.42	.51	2340.39	390	310	310		90	135		5.2
8		.42	.51	2341.47	390	320	310		90	137		5.2
9		.46	.55	—	390	300	260		100	140		5.8
10		.40	.48	2344.90	390	310	270		95	141		5.6
11		.34	.41	2346.31	390	310	280		97	142		4.2
12		.20	.24	2347.38	~~250~~	310	290		100	145		2.3
1		.40	.48	2349.02	390	230	290		110	150		4.9
2		.50	.61	2350.68	390	265	300		80	150		6.2
3		.52	.63	2352.43	390	280	300		80	150		6.8
4		.60	.73	2354.28	400	295	310		80	150		7.0
5		.58	.70	2355.64	400	300	310		82	150		6.8
6		.52	.63	2357.40	400	300	310		80	150		6.8
7		.46	.55	2359.96	400	310	320		95	152		6.0
8		.42	.51	2360.51	390	310	220		85	152		6.8
9		.46	.55	2362.11	390	310	320		85	152		6.2
10		.40	.48	2363.60	390	310	320		88	152		5.0
11		.40	.48	2365.90	390	310	320		88	155		5.0
12		.30	.36	2366.32	240	310	320		90	160		4.8
Average		.43	.52	—	392	—	—	—	—	—	—	—

METER CORR 1.0516

METER VOL. END 2366.32
START 2329.71
SAMPLE VOL. 38.49 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-88 "H_2O	29.64

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .249

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	187	100	87
#2	112	100	12
#3	1	0	1
		Total	100

#4 Silica Gel	g(End)	g(Start)	Δgrams
	173.4	163	10.4
		Total Vol. H_2O	10.4 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min — Before — After

Sampling Time Per Point, Min
3

ISOKINETICS = 95.2

TEST NUMBER 35
DATE 5-31-78
OPERATOR JD+MJ
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1		.17	.40	2964.17		280	270		70	90		4.0
		.17	.40	2965.60		310	295		70	90		3.9
		.14	.33	2966.94		340	320		69	90		3.5
		.15	.35	2968.25		360	339		70	92		3.5
PORT #2		.17	.40	2969.66		270	385		70	95		3.9
		.16	.37	2971.00		300	351		70	97		3.7
		.14	.33	2972.27		340	370		70	100		3.4
		.13	.30	2973.46		360	380		72	101		3.1
PORT #3		.19	.44	2974.90		290	380		75	101		4.1
		.18	.42	2976.34		301	389		80	101		4.0
		.11	.26	2977.45		349	395		72	102		2.0
		.04	.09	2978.03		365	405		75	105		—
PORT #4		.16	.37	2979.32		335	405		82	105		3.5
		.16	.37	2980.61		310	410		80	102		3.7
		.09	.21	2981.61		340	409		80	105		1.9
		.04	.09	2982.25		362	399		80	106		1.0
PORT #5		.19	.44	2983.64	565	275	350		75	110		4.0
		.16	.37	2984.92	565	315	350		68	110		3.5
		.14	.33	2986.17	570	355	349		70	110		3.2
		.11	.26	2987.26	—	375	349		70	110		2.9
PORT #6		.14	.33	2988.27	570	255	230		82	110		3.2
		.14	.33	2989.49	610	295	325		75	111		3.2
		.13	.30	2990.63	580	340	330		75	112		3.1
		.11	.26	2991.69	—	370	330		78	111		3.0
Average		.13	.31		576	—	—	—	—	—	—	—

METER VOL. END 2991.69
START 2962.60
SAMPLE VOL. 29.09 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.71 "H_2O	29.48

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .318
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	159	100	59
#2	104	100	4
#3	0	0	0
		Total	63.0

#4 Silica Gel	g(End)	g(Start)	Δgrams
	159.0	151.2	7.8
		Total Vol. H_2O	7.8 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = 102.6 %

TEST NUMBER 35

DATE 5-31-78

OPERATOR R.A.P

FUEL

SITE C

PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
N-P,	10:34	.15	.18	2367.34	400	280	300		100	110		2.2
2		.16	.19	2368.29	400	280	300		82	122		2.4
3		.19	.23	2369.39	410	285	285		85	122		2.0
4		.22	.26	2370.50	405	290	290		81	123		3.1
5		.21	.25	2371.56	405	290	280		80	125		3.0
6		.21	.25	2372.64	405	295	270		80	126		3.0
7		.25	.30	2374.83	405	300	280		80	129		3.3
8		.26	.31	2375 —	405	290	280		79	130		3.5
9		.25	.30	2376.24	405	295	285		78	133		3.3
10		.25	.30	2377.40	405	295	285		79	135		3.3
11		.21	.25	2378.41	385	295	285		80	138		3.0
12		.16	.19	2379.30	—	295	280		80	140		2.4
E-1	11:28	.18	.22	2380.30	405	240	270		102	148		2.8
2		.22	.26	2381.35	405	250	275		90	148		3.0
3		.23	.28	2382.42	410	270	280		88	148		3.2
4		.23	.28	2383.50	410	280	280		83	149		3.3
5		.27	.32	2384.68	410	280	280		85	150		3.8
6		.26	.31	2385.83	410	285	285		85	150		3.5
7		.24	.29	2386.93	410	285	285		88	152		3.2
8		.23	.28	2388.04	410	290	290		90	153		3.3
9		.22	.26	2389.08	405	290	290		90	155		3.0
10		.22	.26	2390.09	405	300	290		91	156		3.0
11		.22	.26	2391.13	400	300	290		92	158		3.0
12		.14	.17	2391.885	—	300	300		92	160		2.3
Average		.215	.258	—	405							

METER CORR 1.0516

METER VOL. END 2391.885

START 2366.429

SAMPLE VOL. 26.769 - CORR.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.68" H_2O	29.48

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .249

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	150	-	100	=	50
#2	104	-	100	=	4
#3	0	-	0	=	0
				Total	54

#4 Silica Gel	g(End)		g(Start)		Δgrams
	154	-	148	=	6

Total Vol. H_2O 60 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft^3/min

ISOKINETICS = 92.9

TEST NUMBER 36
DATE 6-1-78
OPERATOR J.D.
FUEL
SITE C
PROBE LOCATION BLR OUT

Sampling Time Per Point, Min
3

Before
After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #6		.38	.90	2992.90	630	230	295		90	90		8.4
		.38	.90	2994.92	620	260	300		85	90		8.0
		.32	.70	2996.70	620	305	305		80	92		—
		.27	.64	2998.50	—	310	250		70	92		6.1
PORT #5		.42	1.0	3000.64	630	250	260		85	95		8.9
		.39	.92	3002.68	620	260	260		75	95		8.1
		.30	.69	3004.46	630	300	275		80	100		6.3
		.26	.60	3006.14		330	285		80	100		5.6
PORT #4		.41	.95	3008.22		260	285		90	100		8.3
		.32	.74	3010.08		285	285		78	100		6.8
		.23	.57	3011.67		330	295		80	103		5.7
		.15	.37	3013.17		350	300		80	103		3.2
PORT #3		.41	.98	3015.23		310	300		90	103		8.3
		.34	.84	3017.16		310	310		80	105		7.6
		.22	.54	3018.72		320	320		80	110		5.5
		.13	.32	3020.00		360	320		85	110		3.0
PORT #2		.37	.90	3022.11		280	300		90	110		8.0
		.35	.85	3024.16		300	305		80	108		7.9
		.27	.66	3025.89		340	310		80	105		6.3
		.30	.74	3027.75		345	310		90	110		—
PORT #1		.42	1.02	3029.93		300	310		90	105		9.1
		.40	.98	3032.10		295	310		90	105		8.9
		.33	.88	3034.13		330	320		90	102		8.0
		.34	.84	3035.17		350	330		90	103		8.0
Average		.319	.772	—	625	—						

METER VOL. END 3035.17
START 2991.71
SAMPLE VOL. 43.46 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.2" H_2O	29.27

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .318

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	186	-	100	=	86
#2	112	-	100	=	12
#3	0	-	0	=	0
				Total	
#4 Silica Gel	g(End) 161.3	-	g(Start) 147	=	Δgrams 14

Total Vol. H_2O 112 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = 108. %

TEST NUMBER 36

DATE 6-1-78

OPERATOR S.U.

FUEL

SITE C

PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
1		.30	.36	2398.60	390	285	320		100	125		1.9
2		.38	.45	2400.12	400	285	315		90	130		4.0
3		.43	.51	2401.64	400	290	315		90	130		4.5
4		.45	.54	2403.35	400	290	310		88	130		[illegible].0
5		.44	.525	2405.94	400	290	310		90	133		5.0
6		.43	.51	2406.53	400	285	310		90	135		4.9
7		.42	.50	2408.15	400	285	305		95	140		4.8
8		.40	.48	2409.59	400	290	305		92	140		4.4
9		.38	.45	2411.22	400	300	300		90	148		4.3
10		.38	.45	2412.64	400	300	300		90	149		4.3
11		.25	.30	2414.87	400	305	300		90	150		3.1
12		.25	.30	2415.20	~~240~~	310	310		100	150		3.1
1		.40	.48	2417.74	400	275	310		100	160		4.1
2		.45	.54	2418.40	400	330	305		90	160		5.0
3		.50	.60	2420.04	400	370	310		88	160		5.9
4		.56	.67	2421.72	400	390	310		90	160		6.0
5		.54	.645	2423.51	400	400	310		90	160		6.0
6		.53	.63	2425.29	400	410	315		90	160		5.9
7		.52	.62	2427.84	400	420	320		90	165		5.8
8		.50	.60	2428.50	400	420	320		90	168		5.7
9		.45	.54	2430.15	400	270	318		98	169		5.3
10		.45	.54	2431.64	400	330	310		89	170		5.0
11		.40	.48	2433.21	400	360	310		90	170		4.1
12		.30	.36	2434.48	—	400	310		95	170		3.2
Average		.42	.50		400	—						

METER BOX 1.0516

METER VOL. END 2434.48

START 2397.58

SAMPLE VOL. 38.804 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.8 " H_2O	29.31

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)=

=

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	190	-	100	=	90
#2	110	-	100	=	10
#3	0	-	0	=	0
				Total	100

#4	g(End)		g(Start)		Δgrams
Silica Gel	154	-	143	=	11
				Total Vol. H_2O	111 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft³/min
Before
After

ISOKINETICS = _____ %

TEST NUMBER 40
DATE 6-2-78
OPERATOR R.A.P.
FUEL
SITE C
PROBE LOCATION BLROUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #1	10:28	.44	1.03	3040.21		250	285		85	73		7.6
		.43	1.02	3042.50		280	290		80	73		7.2
		.39	.93	3044.70		320	305		78	76		6.8
		.34	.82	3046.76		335	310		73	76		6.1
PORT #2		.41	1.0	3049.08	630	275	300		80	78		7.0
		.43	1.02	3051.36	630	280	305		71	80		7.8
		.32	.76	3053.32	630	320	310		70	82		6.3
		.31	.75	3055.27	—	330	315		70	85		6.1
PORT #3		.44	1.03	3057.47	630	270	300		80	86		7.5
		.39	.93	3059.61	630	280	305		69	88		7.2
		.26	.63	3061.40	630	300	310		69	88		5.2
		.16	.38	3062.74	—	335	305		69	90		3.8
PORT #4		.44	1.03	3065.03	630	305	310		75	90		7.8
		.37	.90	3067.11	630	300	310		68	92		6.6
		.24	.57	3068.73	630	335	310		68	95		4.8
		.16	.38	3070.13	—	340	310		70	92		3.8
PORT #5		.44	1.03	3072.33	630	280	300		82	95		7.8
		.39	.94	3074.43	630	285	310		70	93		6.8
		.32	.77	3076.34		330	315		70	93		5.6
		.32	.77	3078.28		340	315		71	95		5.8
PORT #6		.36	.87	3080.31		285	300		82	95		6.2
		.42	1.00	3082.48		330	300		72	97		—
		.37	.90	3084.51		330	300		72	97		6.5
		.31	.75	3086.408		345	320		72	98		5.8
Average		.39	.84	—	630		—					—

METER VOL. END 3086.408
START 3037.835
SAMPLE VOL. 48.573 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	1.3" H_2O	29.75

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal) =
% H_2O = Noz(Actual) = .318
=

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	171	100	71
#2	109	100	9
#3	0	0	0
		Total	80

#4	g(End)	g(Start)	Δgrams
Silica Gel	154.9	142.5	12.4
		Total Vol. H_2O	92.4 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = _____ %

TEST NUMBER 40
DATE 6-2-78
OPERATOR JO
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
1		.40	.48	2441.23	400	400	310		98	120		5.2
2		.50	.60	2442.83	400	400	310		90	120		6.1
3		.54	.65	2444.63	400	410	315		89	120		7.0
4		.56	.67	2446.48	400	410	320		85	120		7.1
5		.60	.72	2448.37	400	410	325		89	121		7.6
6		.54	.65	2450.14	400	410	325		87	125		7.0
7		.46	.55	2451.74	400	410	320		90	127		6.0
8		.40	.48	2453.31	400	410	320		82	129		5.2
9		.42	.50	2454.78	400	405	320		82	130		5.4
10		.40	.48	2456.35	400	408	320		82	130		5.0
11		.34	.40	2457.66	390	410	318		85	130		4.8
12		.30	.36	2458.99	250	410	315		85	132		4.0
1		.36	.43	2460.44	400	250	280		105	135		4.8
2		.40	.48	2461.88	400	260	290		92	139		5.0
3		.42	.50	2463.44	400	270	290		85	139		5.4
4		.50	.60	2465.09	400	280	300		80	139		6.2
5		.54	.65	2466.81	400	280	300		82	140		7.0
6		.52	.62	2468.60	400	280	300		90	140		6.5
7		.50	.60	2470.12	400	275	300		90	140		6.2
8		.46	.55	2471.62	400	280	305		90	142		6.0
9		.40	.48	2473.13	400	290	300		90	140		5.0
10		.36	.43	2474.47	400	300	300		90	142		4.7
11		.36	.43	2475.83	395	325	300		98	145		4.8
12		.24	.29	2477.01	260	—	300		92	145		3.5
Average		.438	.525	—	387							

METER CORR 1.0516

METER VOL. END 2477.01
START 2440.00
SAMPLE VOL. 38.919 CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.917	-.86 "H_2O	29.75

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)=
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	166	-	100	=	66
#2	119	-	100	=	19
#3	8	-	0	=	8
				Total	93

#4	g(End)		g(Start)		Δgrams
Silica Gel	164.1	-	152.9	=	11.2
				Total Vol. H_2O	104.2 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 97.2%

TEST NUMBER 41
DATE 6-7-78
OPERATOR R.A.P
FUEL
SITE C
PROBE LOCATION BLR-OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
PORT #6		.19	.47	3088.18	—	240	330		135	78		4.3
		.20	.75	—								
		.19	.47	3091.76	—	285	320		80	80		4.7
		.15	.40	3093.25	—	315	320		73	82		4.2
PORT #5		.23	.62	3095.01	585	230	320		92	92		5.3
		.19	.47	3096.53	585	270	320		72	97		4.8
		.15	.40	3097.95	585	310	310		73	100		4.0
		.14	.37	3099.32	—	330	315		78	101		3.8
PORT #4		.21	.57	3100.94	585	280	290		83	103		4.9
		.18	.49	3102.46	585	280	290		78	110		4.3
		.12	.32	3103.72	585	300	295		82	115		3.7
		.08	.21	3104.72	—							
PORT #3		.21	.57	3106.36	590	315	295		83	118		4.7
		.19	.51	3107.87	590	300	300		75	120		4.5
		.13	.35	3109.20	590	320	300		80	120		3.8
		.08	.21	3110.15	—	330	305		78	120		2.8
PORT #2		.20	.54	3111.71	590	280	280		90	120		4.6
		.18	.48	3113.24	590	290	285		75	118		4.3
		.14	.37	3114.51	590	315	285		78	118		4.7
		.15	.40	3115.87	—	330	290		78	117		4.8
PORT #1		.21	.58	3117.52	—	290	280		88	117		4.8
		.21	.58	3119.15	—	280	280		78	117		4.8
		.18	.48	3120.60	—	310	280		78	117		4.2
		.14	.37	3121.920	—	330	285		80	118		3.8
Average		.168	.45	—	587.5	—						

METER VOL. END 3121.920
START 3086.550
SAMPLE VOL. 35.37 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.77" H_2O	29.20

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)=
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	137	-	100	=	37
#2	104	-	100	=	4
#3	0	-	0	=	0
				Total	41

#4	g(End)		g(Start)		Δgrams
Silica Gel	151	-	140.4	=	10.6
				Total Vol. H_2O	51.6 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 108 %

TEST NUMBER 41
DATE 6-7-78
OPERATOR MJ
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
E-1		.17	.23	2477.13	385	275	305		110	130		2.5
2		.18	.23	2478.26	385	275	310		98	130		2.5
3		.20	.26	2479.34	390	280	309		92	132		2.7
4		.21	.27	2480.41	390	285	309		95	135		2.9
5		.21	.27	2481.52	390	282	305		95	140		2.9
6		.23	.30	2482.64	395	290	305		100	142		3.2
7		.23	.30	2483.83	395	300	310		95	150		3.1
8		.23	.30	2485.07	395	300	310		95	150		3.1
9		.20	.26	2486.28	395	305	310		98	152		2.7
10		.19	.25	2487.33	380	305	311		100	158		2.5
11		.12	.15	2488.36	—	305	312		100	160		2.0
12		.02	.025	2489.14	—	300	315		105	160		1.5
N-1		.16	.21	2489.64	395	245	295		105	160		2.2
2		.20	.26	2490.62	395	270	300		90	160		2.6
3		.22	.28	2491.67	395	285	305		90	160		2.8
4		.22	.28	2492.76	395	295	300		90	160		2.9
5		.24	.31	2493.90	395	300	305		87	162		3.1
6		.25	.32	2495.10	395	300	305		90	165		3.2
7		.28	.36	2496.33	395	300	310		90	165		3.4
8		.26	.34	2497.52	395	305	310		90	168		3.3
9		.26	.34	2498.68	395	305	310		90	170		3.2
10		.24	.31	2499.90	395	305	310		90	170		3.1
11		.22	.28	2501.13	395	305	310		90	170		2.3
12		.15	.19	2502.19	—	295	310		110	165		2.0
				2503.02								
Average		.203	.263	—	390	—						

METER CORR 1.0516

METER VOL. END 2503.02
START 2477.13
SAMPLE VOL. 27.225 ft³ CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	- .82" H_2O	29.20

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal)=
% H_2O = Noz(Actual)= .249
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	127	100	27
#2	103	100	3
#3	0	0	0
		Total	30

#4	g(End)	g(Start)	Δgrams
Silica Gel	146	140	6
		Total Vol. H_2O	36 ml

PARTICULATE

DATA

Leak Check Rate

	Vac in. Hg	ft³/min
Before		
After		

ISOKINETICS = 96.4

Sampling Time Per Point, Min
3

TEST NUMBER 42
DATE 6-7-78
OPERATOR R. AP
FUEL
SITE C
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2,%	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
PORT #1	9:45	.39	1.03	3127.46	610	235	260		72	92		7.6
		.43	1.18	3129.80	618	270	275		75	92		8.2
		.38	1.02	3132.04	618	310	285		73	92		7.4
		.36	.98	3134.21	—	325	300		70	95		7.2
PORT #2		.44	1.20	3136.60	610	260	270		75	100		8.8
		.42	1.15	3138.90	618	280	275		65	100		8.3
		.33	.90	3140.96	618	315	285		65	100		6.8
		.33	.90	3143.00	—	330	290		65	102		6.8
PORT #3		.44	1.20	3145.32	620	255	290		72	106		8.8
		.37	1.01	3147.45	630	270	295		65	108		7.5
		.26	.72	3149.26	—	310	300		65	110		5.7
		.18	.49	3150.70	—	330	305		68	110		4.3
PORT #4		.40	1.1	3152.90	—	280	290		80	115		8.0
		.35	.95	3154.97	—	280	295		70	115		7.2
		.23	.64	3156.63	—	320	330		70	118		5.3
		.16	.44	3158.09	—	335	305		70	118		4.3
PORT #5		.42	1.15	3160.37	630	260	300		78	120		8.8
		.39	1.08	3162.51	630	220	310		72	120		8.2
		.31	.86	3164.40	620	275	310		68	122		7.9
		.29	.80	3166.27	—	275	310		68	122		6.9
PORT #6		.37	1.0	3168.31	630	250	295		78	123		8.0
		.40	1.10	3170.45	630	270	295		65	123		8.8
		.34	.93	3172.45	—	300	300		68	123		7.8
		.30	.82	3174.308	—	330	310		69	125		7.0
Average		.345	.947	—	621	—						—

METER VOL. END 3174.308
START 3125.188
SAMPLE VOL. 49.22 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.6 H_2O	29.57

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .318
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	150	-	100	=	50
#2	107	-	100	=	7
#3	0	-	0	=	0
				Total	57

#4 Silica Gel	g(End)		g(Start)		Δgrams
	154.1	-	142.6	=	11.5
				Total Vol. H_2O	68.5 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3.0

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 91.2

TEST NUMBER 42
DATE 6-9-78
OPERATOR JD
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
1		.40	1.10	2505.52	380	300	290		80	120		9.2
2		.50	1.21	2507.89	380	290	290		77	120		9.8
3		.56	1.26	2510.38	380	300	290		72	120		10.7
4		.62	1.37	2512.88	380	300	280		72	120		12.1
5		.62	1.37	2515.47	385	310	282		70	121		12.1
6		.60	1.34	2517.88	390	310	285		72	123		11.8
7		.50	1.21	2520.29	390	308	285		72	125		10.5
8		.44	1.16	2522.54	390	305	285		70	129		10.0
9		.44	1.16	2524.81	390	305	285		70	130		10.2
10		.40	1.1	2527.12	390	300	285		71	130		9.9
11		.34	.92	2529.21	390	290	285		71	132		8.5
12		.28	.76	2531.09	380	290	280		72	132		6.4
1		.34	.92	2533.18	380	210	237		85	136		8.2
2		.40	1.1	2535.42	390	247	270		79	136		10.0
3		.43	1.15	2537.64	390	270	275		81	137		10.8
4		.46	1.22	2540.44	390	280	290		81	138		11.6
5		.50	1.21	2542.85	390	285	300		82	139		11.4
6		.50	1.21	2545.16	390	290	300		85	139		11.4
7		.42	1.13	2547.42	390	300	305		87	140		11.0
8		.40	1.10	2549.58	400	300	305		85	140		10.9
9		.35	.95	2551.64	390	300	310		90	142		9.5
10		.32	.86	2553.65	390	300	310		90	142		8.6
11		.30	.81	2555.59	370	300	310		90	142		8.2
12		.22	.59	2557.45	260	300	310		90	142		6.7
Average		.43	1.09	—	386	—						—

METER CORR 1.0516

METER VOL. END 2557.45
START 2503.22
SAMPLE VOL. 57.028.2 CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.70 H_2O	29.57

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .318
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	158	-	100	=	58
#2	116	-	100	=	16
#3	0	-	0	=	0
				Total	74

#4	g(End)		g(Start)		Δgrams
Silica Gel	158.2	-	144	=	14.2
				Total Vol. H_2O	88.2 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = _____ %

Sampling Time Per Point, Min
3

Before

After

TEST NUMBER 43

DATE 6-13-73

OPERATOR R.AP

FUEL

SITE C

PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
PORT #6	10:42	.24	.66	3176.50			240		92	92		5.3
		.24	.66	3178.28			250		70	90		5.3
		.23	.64	3180.04			270		70	91		5.2
		.17	.47	3181.53			280		71	92		4.2
PORT #5		.28	.76	3183.61	600		270		80	98		5.8
		.22	.60	3185.30	600		280		68	100		4.8
		.19	.53	3186.85	—		290		70	102		4.5
		.20	.55	3188.48	—		300		70	103		4.6
PORT #4		.28	.76	3190.33	600		290		78	109		5.8
		.24	.66	3192.05	600		300		70	110		5.2
		.16	.44	3193.44	—		300		70	110		3.8
		.11	.30	3194.61	—							
PORT #3		.24	.66	3196.33	600		285		80	114		5.2
		.23	.64	3198.06	600		290		72	117		5.2
		.15	.41	3199.38	—		295		70	120		3.8
		.10	.27	3200.46	—		305		70	120		3.0
PORT #2		.23	.63	3202.23	600		300		80	118		5.1
		.23	.63	3203.85			305		70	120		5.0
		.17	.47	3205.28			310		70	120		4.0
		.18	.53	3206.80			310		70	121		4.7
PORT #1		.24	.66	3208.48			310		80	119		5.2
		.24	.66	3210.18			315		71	121		5.2
		.22	.60	3211.75			315		70	122		4.8
		.20	.55	3213.328			320		72	122		4.7
Average		.208	.573	—	600		—					

METER VOL. END 3213.328

START 3174.642

SAMPLE VOL. 38.686 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.86" H_2O	29.94

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .318

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	133	-	100	=	33
#2	106	-	100	=	6
#3	0	-	0	=	0
				Total	39

#4	g(End)		g(Start)		Δgrams
Silica Gel	161.2	-	150	=	11.2

Total Vol. H_2O 50.2 ml

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

Sampling Time Per Point, Min
3

ISOKINETICS = _____ %

TEST NUMBER 43
DATE 6-13-78
OPERATOR J.D.
FUEL
SITE C
PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2, %	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
1		.19	.52	2559.22	380	260	315		95	115		5.1
2		.21	.56	2560.81	380	270	315		90	119		5.3
3		.25	.68	2562.60	385	270	312		89	120		6.0
4		.26	.71	2564.49	385	280	310		88	120		6.4
5		.28	.76	2566.99	385	284	305		86	122		6.6
6		.30	.81	2568.36	385	280	310		86	122		7.0
7		.30	.81	2570.32	385	285	305		87	125		7.2
8		.32	.87	2572.32	385	285	300		82	128		7.7
9		.33	.90	2574.34	385	289	304		81	130		8.0
10		.28	.76	2576.20	385	285	303		80	130		6.9
11		.24	.65	2577.86	380	282	303		80	131		5.9
12		.19	.52	2579.46	265	285	303		81	132		5.0
1		.20	.55	2581.05	385	185	280		88	128		5.1
2		.26	.71	2582.80	385	218	290		78	137		6.3
3		.28	.76	2584.65	390	245	295		75	138		6.9
4		.26	.71	2586.49	392	260	295		77	138		6.5
5		.30	.81	2588.43	390	270	295		76	140		7.2
6		.29	.79	2590.30	390	280	300		78	140		7.0
7		.32	.87	2592.24	390	280	300		79	141		8.0
8		.33	.90	2594.20	395	285	300		78	143		8.4
9		.30	.81	2596.06	390	290	300		78	142		8.2
10		.29	.79	2597.91	390	288	302		79	145		7.3
11		.28	.76	2599.69	390	285	305		80	148		7.0
12		.18	.49	2601.21	265	285	305		80	148		5.0
Average		.256	.729	—	377	—					—	

METER CORR 1.0516

METER VOL. END 2601.21
START 2557.52
SAMPLE VOL. 45.94 ft^3 — CORR.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.817	-.68 H_2O	29.99

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .318
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	147	100	47
#2	114	100	14
#3	3	0	3
		Total	64

#4	g(End)	g(Start)	Δgrams
Silica Gel	159.4	150	9.4
		Total Vol. H_2O	73.4 ml

PARTICULATE LAB WORKSHEET

TEST NO. 8 BLR-OUT (~~Inlet, Outlet~~) LOCATION Site C

Date 4-25-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			1	2	2		
DATE WT.			—	—	—		
TARE WT.	1		64.1552	49.6435	.5808		
	2		64.1565	49.6437	.5809		
	3		64.1553	49.6435	.5809		
	4		—	—	—		
AVG.			64.1553	49.6436	.5809		

POST TEST WTS.

	1		64.5860	61.4138	.8095		
	2		64.5855	61.4141	.8096		
	3		64.5854	61.4145	.8097		
	4		—	—	—		
AVG.			64.5856	61.4141	.8096		
Δ WT.			0.4303	11.7705	0.2287		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 12429.5 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 9 (~~Inlet, Outlet~~ BLR OUT) LOCATION Side C

Date 5-1-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			7	3	3		
DATE WT.			5-2-78	—	—		
TARE WT.	1		67.8353	50.4404	.5801		
	2		67.8358	50.4395	.5802		
	3		67.8361	50.4401	.5802		
	4		—	—	—		
AVG.			67.8357	50.4400	.5802		

POST TEST WTS.

	1		68.3619	75.5904	.9460		
	2		68.3619	75.5910	.9468		
	3		68.3620	75.5909	~~.9475~~		
	4		—	—	—		
AVG.			68.3619	75.5908	.9464		
Δ WT.			0.5262	25.1508	0.3662		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 26043.2 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 9- MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date 5-1-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			8	4	1		
DATE WT.			5-2-78	—	—		
TARE WT.	1		68.4622	50.1619	.8227		
	2		68.4617	~~50.1607~~	.8228		
	3		—	50.1621	.8228		
	4		—	—	—		
AVG.			68.4620	50.1616	.8228		
POST TEST WTS.							
	1		68.7957	50.6849	1.3939		
	2		68.7960	50.6850	1.3942		
	3		68.7960	50.6851	~~1.3955~~		
	4		—	—	—		
AVG.			68.7959	50.6850	1.3941		
Δ WT.			0.3339	0.5234	0.5713		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 1428.6 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. MECH-10 (~~Inlet, Outlet~~) LOCATION Site C

Date 5-3-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			13	6	5		
DATE WT.			5-5-78	5-3-78	—		
TARE WT.	1		64.0648	50.3290	.5859		
	2		64.0649	50.3292	.5861		
	3		64.0648	50.3293	.5860		
	4		—	—	—		
AVG.			64.0648	50.3292	.5860		
POST TEST WTS.							
	1		64.1889	50.4665	.9519		
	2		~~64.1892~~	50.4670	Hygroscopic		
	3		64.1881	50.4660			
	4		—	—			
AVG.			64.1885	50.4665	.9519		
Δ WT.			0.1237	0.1373	0.3659		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 626.9 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. BLRCUT-10 (~~Inlet, Outlet~~) LOCATION side C

Date 5-3-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			12	5	4		
DATE WT.			5-3-78	5-3-78	5-3-78		
TARE WT.	1		69.0095	50.2992	.5900		
	2		69.0095	50.2996	.5903		
	3		69.0095	50.2993	.5902		
	4		—	—	—		
AVG.			69.0095	50.2994	.5902		
POST TEST WTS.							
	1		69.2427	56.2807	.8590		
	2		~~69.2433~~	56.2814	.8615		
	3		69.2423	56.281[illegible]	—		
	4		—	—	—		
AVG.			69.2425	56.2813	.8603		
Δ WT.			0.2330	5.9819	0.2701		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 6485.0 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 11- BLR OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			17	14	7		
DATE WT.			5-10-78	5-3-78	5-3-78		
TARE WT.	1		~~67.8362~~	50.3071	.5874		
	2		67.8390	50.3074	.5874		
	3		67.8392	50.3076	.5874		
	4		—	—	—		
AVG.			67.8391	50.3074	.5874		

POST TEST WTS.

	1		68.1281	57.2131	.9168		
	2		68.1281	57.2120	hygroscopic		
	3		68.1283	57.2130			
	4		—	—			
AVG.			68.1282	57.2127	.9168		
Δ WT.			0.2891	6.9053	.3294		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 7523.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 11- MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date 5-3-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			18	15	8		
DATE WT.			5-10-78	5-3-78	5-3-78		
TARE WT.	1		49.6391	69.5602	.5764		
	2		49.6419	69.5601	.5766		
	3		49.6418	69.5606	.5765		
	4		—	—	—		
AVG.			49.6409	69.5603	.5765		
POST TEST WTS.							
	1		49.7600	69.6748	.9863		
	2		49.7609	69.6731	.9865		
	3		49.7608	69.6748	—		
	4		—	—	—		
AVG.			49.7606	69.6742	.9864		
Δ WT.			0.1197	0.1139	0.4099		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 643.5 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 12 BLR-OUT (~~Inlet, Outlet~~) LOCATION Site C

Date 5-4-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			23	10	9		
DATE WT.			5-12-78	5-4-78	5-4-78		
TARE WT.	1		64.1602	63.5544	.5805		
	2		64.1600	63.5543	.5810		
	3		64.1603	63.5544	.5814		
	4		—	—	—		
AVG.			64.1603	63.5544	.5810		

POST TEST WTS.

	1		64.5108	84.2143	.9262		
	2		64.5110	84.2090	.9270		
	3		64.5112	84.2113	—		
	4		—	—	—		
AVG.			64.5112	84.2115	.9266		
Δ WT.			0.3507	20.6611	0.3456		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 21357.4 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 12 MECH OUT (~~Inlet, Outlet~~) LOCATION Side C

Date 5-4-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			24	11	10		
DATE WT.			5-12-78	5-4-78	5-4-78		
TARE WT.	1		69.0098	64.5846	.5908		
	2		69.0097	64.5847	.5913		
	3		69.0098	64.5848	.5917		
	4		—	—	—		
AVG.			69.0098	64.5847	.5913		

POST TEST WTS.

	1		69.2609	64.9653	.9497		
	2		69.2615	64.9625	.9511		
	3		69.2614	64.9645	—		
	4		—	—	—		
AVG.			69.2613	64.9641	.9504		
Δ WT.			0.2515	0.3794	0.3591		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 990.0 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 13 BLROUT (~~Inlet, Outlet~~) LOCATION Site C

Date 5-4-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			25	1	6		
DATE WT.			5-12-78	5-5-78	5-4-78		
TARE WT.	1		69.5630	64.1586	.5792		
	2		69.5626	64.1588	.5798		
	3		69.5627	64.1590	.5801		
	4		—	—	—		
AVG.			69.5628	64.1588	.5797		
POST TEST WTS.							
	1		70.0484	85.2527	1.0635		
	2		70.0487	85.2536	1.0650		
	3		70.0488	85.2539	—		
	4		—	—	—		
AVG.			70.0486	85.2534	1.0643		
Δ WT.			0.4858	21.0946	0.4846		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 22,065.0 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 13 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date 5-4-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			27	9	11		
DATE WT.			5-12-78	5-5-78	5-4-78		
TARE WT.	1		67.8242	67.8237	.5902		
	2		67.8242	67.8238	.5908		
	3		67.8243	67.8239	.5910		
	4		—	—	—		
AVG.			67.8242	67.8238	.5907		
POST TEST WTS.							
	1		68.0010	67.9734	1.1198		
	2		68.0014	67.9717	—		
	3		68.0016	67.9734	—		
	4		—	—	—		
AVG.			68.0013	67.9728	1.1198		
Δ WT.			0.1771	0.1490	0.5291		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 855.2 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 14 (~~Inlet, Outlet~~) BLR OUT LOCATION Site C

Date 5-9-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	12		
BEAKER NO.			28	16	—		
DATE WT.			5-12-78	5-9-78	5-9-78		
TARE WT.	1		63.5527	~~50.4385~~	.5798		
	2		63.5531	50.4385	.5801		
	3		63.5529	50.4385	.5800		
	4		—	—	—		
AVG.			63.5529	50.4385	.5800		

POST TEST WTS.

	1		63.9291	73.0176	.9092		
	2		63.9298	73.0179	.9110		
	3		63.9296	~~73.0213~~	—		
	4		—	—	—		
AVG.			63.9395	73.0177	.9101		
Δ WT.			0.3766	22.5792	0.3301		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 23,285.9 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 14 MELT OUT (~~Inlet, Outlet~~) LOCATION Side C

Date 5-9-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			31	19	13		
DATE WT.			5-12-78	5-9-78	5-9-78		
TARE WT.	1		64.5833	~~50.1565~~	.7687		
	2		64.5832	50.1602	.7694		
	3		64.5831	50.1602	.7693		
	4		—	—	—		
AVG.			64.5832	50.1602	.7691		
POST TEST WTS.							
	1		64.8710	50.7257	1.1561		
	2		64.8714	50.7260	1.1541		
	3		64.8718	50.7261	—		
	4		—	—	—		
AVG.			64.8714	50.7259	1.1551		
Δ WT.			0.2882	0.5657	0.3860		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 1239.9 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 15 BLROUT (~~Inlet, Outlet~~) LOCATION Side C

Date 5-10-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		ACETONE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		—	—	—	—		
BEAKER NO.		32	34	20	14		
DATE WT.		—	—	5-11-78	5-10-78		
TARE WT.	1	50.3075	50.1611	50.3000	.5975		
	2	50.3072	50.1608	50.3000	.5976		
	3	50.3073	50.1609	50.3001	.5977		
	4	—	—	—	—		
AVG.		50.3073	50.1609	50.3000	.5976		

POST TEST WTS.

	1	50.5567	50.3689	73.5530	.9545		
	2	50.5562	50.3689	73.5533	.9533		
	3	50.5563	50.3687	73.5535	—		
	4	—	—	—	—		
AVG.		50.5564	50.3688	75.5533	.9539		
Δ WT.		0.2491	0.2079	23.2533	0.3563		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 24,066.6 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 15 MECH OUT (~~Inlet, Outlet~~) LOCATION Side C

Date 5-10-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			24	21	15		
DATE WT.			5-16-78	5-11-78	5-10-78		
TARE WT.	1		69.0054	64.0645	.8198		
	2		69.0056	64.0642	.8200		
	3		—	64.0643	.8200		
	4		—	—	—		
AVG.			69.0055	64.0643	.8199		
POST TEST WTS.							
	1		69.2613	64.4650	1.2311		
	2		69.2617	64.4655	1.2290		
	3		69.2620	64.4668	—		
	4		—	—	—		
AVG.			69.2617	64.4658	1.2200		
Δ WT.			0.2562	0.4015	0.4001		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 1057.8 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 16 BLR-OUT (~~Inlet, Outlet~~) LOCATION Side C

Date 5-11-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			25	22	16		
DATE WT.			5-16-78	5-12-78	5-11-78		
TARE WT.	1		69.5607	50.3289	.6253		
	2		69.5605	50.3290	.6256		
	3		69.5609	50.3290	.6256		
	4		—	—	—		
AVG.			69.5607	50.3290	.6255		
POST TEST WTS.							
	1		69.8811	75.8668	.9576		
	2		69.8825	75.8657	.9533		
	3		69.8820	75.8666	.9537		
	4		—	—	—		
AVG.			69.8819	75.8664	.9549		
Δ WT.			0.3212	25.5374	0.3294		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 26,188.0 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 16 - MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date 5-11-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			27	26	17		
DATE WT.			5-16-78	5-12-78	5-11-78		
TARE WT.	1		67.8208	50.1602	.7529		
	2		67.8209	50.1601	.7530		
	3		67.8209	50.1602	.7531		
	4		—	—	—		
AVG.			67.8209	50.1602	.7530		
POST TEST WTS.							
	1		68.0689	50.6763	1.1340		
	2		68.0675	50.6765	1.1323		
	3		68.0674	50.6773	1.1290		
	4		—	—	—		
AVG.			68.0679	50.6767	1.1318		
Δ WT.			0.2470	0.5165	0.3788		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 1142.3 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 19 BLROUT (Inlet, Outlet) LOCATION Site C

Date 5-12-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			28	29	18		
DATE WT.			5-16-78	5-12-78	5-12-78		
TARE WT.	1		63.5507	50.3069	.5932		
	2		63.5508	50.3071	.5933		
	3		63.5508	50.3071	.5933		
	4		—	—	—		
AVG.			63.5508	50.3070	.5933		
POST TEST WTS.							
	1		63.9068	76.4875	.8950		
	2		63.9073	76.4858	.8923		
	3		63.9074	76.4863	.8919		
	4		—	—	—		
AVG.			63.9074	76.4863	.8931		
Δ WT.			0.3564	26.1795	0.2998		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 26,835.7 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 19 MECH OUT (~~Inlet, Outlet~~) LOCATION Stk C

Date 5-12-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			31	30	19		
DATE WT.			5-16-78	5-12-78	5-12-78		
TARE WT.	1		64.5807	50.4387	.8282		
	2		64.5808	50.4384	.8285		
	3		64.5808	50.4384	.8285		
	4		—	—	—		
AVG.			64.5808	50.4385	.8284		

POST TEST WTS.

	1		64.8611	51.0079	1.1590		
	2		64.8619	51.0077	1.1579		
	3		64.8618	51.0082	—		
	4		—	—	—		
AVG.			64.8616	51.0079	1.1585		
Δ WT.			0.2808	0.5694	0.3301		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 1180.3 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 20 BLR out (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			36	A.	20		
DATE WT.			—	—	—		
TARE WT.	1		102.1507	67.8358	.6422		
	2		102.1499	67.8367	.6422		
	3		102.1498	67.8367	.6423		
	4		—	—	—		
AVG.			102.1501	67.8364	.6422		
POST TEST WTS.							
	1		102.6731	~~76.6301~~	~~.8340~~		
	2		102.6735	76.6272	.8326		
	3		102.6731	76.6269	.8320		
	4		—	—	—		
AVG.			102.6732	76.6270	.8323		
Δ WT.			0.5231	8.7906	0.1901		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 9,503.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 20 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			37	B	21		
DATE WT.			—	—	—		
TARE WT.	1		95.9827	49.6407	.8231		
	2		95.9820	49.6411	.8230		
	3		95.9820	49.6413	.8230		
	4		—	—	—		
AVG.			95.9822	49.6410	.8230		

POST TEST WTS.

	1		96.0974	49.7761	~~1.0344~~		
	2		96.0972	49.7763	1.0311		
	3		96.0973	49.7763	1.0286		
	4		—	—	—		
AVG.			96.0973	49.7762	1.0298		
Δ WT.			0.1151	0.1352	0.2068		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 457.1 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 23 (~~Inlet, Outlet~~ BLROUT) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			38	35	22		
DATE WT.			—	—	—		
TARE WT.	1		97.0310	50.3297	.6457		
	2		97.0306	50.3293	.6458		
	3		97.0302	50.3293	.6460		
	4		—	—	—		
AVG.			97.0306	50.3294	.6458		
POST TEST WTS.							
	1		97.6408	89.1574	.8670		
	2		97.6414	89.1575	.8673		
	3		97.6413	89.1562	—		
	4		—	—	—		
AVG.			97.6412	89.1570	.8672		
Δ WT.			0.6106	38.8276	0.2214		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 39,659.6 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 23 MECH OUT ~~(Inlet, Outlet)~~ LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			39	33	23		
DATE WT.			—	—	—		
TARE WT.	1		95.6539	50.4389	.6539		
	2		95.6528	50.4387	.6540		
	3		95.6530	50.4387	.6541		
	4		—	—	—		
AVG.			95.6532	50.4388	.6540		

POST TEST WTS.

	1		95.8652	51.5981	.9221		
	2		95.8657	51.5982	.9218		
	3		95.8655	51.5985	—		
	4		—	—	—		
AVG.			95.8655	51.5983	.9220		
Δ WT.			0.2123	1.1595	0.2680		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 1,639.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 24 BLR -OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			46	40	24		
DATE WT.			5-25-78	—	—		
TARE WT.	1		95.6527	50.3014	.6497		
	2		95.6526	50.3004	.6498		
	3		95.6528	50.3002	.6498		
	4		—	—	—		
AVG.			95.6527	50.3007	.6498		
POST TEST WTS.							
	1		95.8702	89.0129	.8535		
	2		95.8695	89.0135	.8531		
	3		95.8695	89.0136	.8532		
	4		—	—	—		
AVG.			95.8697	89.0133	.8533		
Δ WT.			0.2170	38.7126	0.2035		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 39,133.1 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 24 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			47	41	25		
DATE WT.			—	—	—		
TARE WT.	1		102.1519	69.0102	.6449		
	2		102.1512	69.0093	.6451		
	3		102.1513	69.0090	.6451		
	4		—	—	—		
AVG.			102.1515	69.0095	.6450		
POST TEST WTS.							
	1		~~102.4427~~	69.5457	.8567		
	2		102.4405	69.5462	.8576		
	3		102.4408	69.5461	.8575		
	4		—	—	—		
AVG.			102.4407	69.5460	.8573		
Δ WT.			0.2892	0.5365	0.2123		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 1038.0 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 25 BLR OUT – (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			48	42	26		
DATE WT.			—	—	—		
TARE WT.	1		97.0300	64.0651	.6453		
	2		97.0293	64.0645	.6454		
	3		97.0294	64.0644	.6455		
	4		—	—	—		
AVG.			97.0296	64.0647	.6454		
POST TEST WTS.							
	1		97.4591	82.8650	.8208		
	2		97.4579	82.8655	.8198		
	3		97.4577	82.8656	.8204		
	4		—	—	—		
AVG.			97.4582	82.8654	.8203		
Δ WT.			0.4286	18.8007	0.1749		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 19,404.2 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 25 MECH OUT (~~Inlet, Outlet~~) LOCATION Stk C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			49	43	27		
DATE WT.			—	—	—		
TARE WT.	1		95.9825	64.5844	.6411		
	2		95.9817	64.5836	.6412		
	3		95.9816	64.5837	.6414		
	4		—	—	—		
AVG.			95.9819	64.5839	.6412		

POST TEST WTS.

	1		96.1575	64.6946	.8018		
	2		96.1567	64.6955	.8012		
	3		96.1568	64.6953	.8011		
	4		—	—	—		
AVG.			96.1570	64.6951	.8014		
Δ WT.			0.1751	0.1112	0.1602		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 446.5 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

BLROUT

TEST NO. 26 (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			55	44	28		
DATE WT.			—	—	—		
TARE WT.	1		64.0637	69.5620	.6575		
	2		64.0646	69.5619	.6575		
	3		64.0646	69.5619	.6576		
	4		—	—	—		
AVG.			64.0643	69.5619	.6575		
POST TEST WTS.							
	1		64.2870	108.9119	.8669		
	2		64.2885	108.9126	.8672		
	3		64.2884	108.9127	.8671		
	4		—	—	—		
AVG.			64.2880	108.9124	.8671		
Δ WT.			0.2237	39.3505	0.2096		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 39,783.8 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 26 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			56	45	29		
DATE WT.			—	—	—		
TARE WT.	1		69.5636	63.5524	.6496		
	2		69.5631	63.5522	.6492		
	3		69.5628	63.5522	.6493		
	4		—	—	—		
AVG.			69.5632	63.5523	.6494		
POST TEST WTS.							
	1		69.8458	64.0475	.8588		
	2		69.8469	64.0490	.8590		
	3		69.8465	64.0491	—		
	4		—	—	—		
AVG.			69.8464	64.0485	.8589		
Δ WT.			0.2832	0.4962	0.2095		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 988.9 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 27 (~~Inlet, Outlet~~ BLR OUT) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			57	50	30		
DATE WT.			—	—	—		
TARE WT.	1		64.5840	50.3077	.6481		
	2		64.5835	50.3079	.6483		
	3		64.5833	50.3080	.6482		
	4		—	—	—		
AVG.			64.5836	50.3079	.6482		
POST TEST WTS.							
	1		64.8131	87.3027	.8702		
	2		64.8134	87.3086	.8711		
	3		64.8135	87.3090	.8718		
	4		—	—	—		
AVG.			64.8133	87.3068	.8710		
Δ WT.			0.2297	36.9989	0.2228		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 37,451.4 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 27 MECH OUT (~~Inlet, Outlet~~) LOCATION Side C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			58	51	31		
DATE WT.			—	—	—		
TARE WT.	1		67.8406	49.6429	.6474		
	2		67.8404	49.6428	.6475		
	3		67.8399	49.6430	.6478		
	4		—	—	—		
AVG.			67.8403	49.6429	.6476		
POST TEST WTS.							
	1		68.2527	50.0581	.8554		
	2		68.2537	50.0585	.8571		
	3		68.2542	50.0585	.8574		
	4		—	—	—		
AVG.			68.2535	50.0583	.8566		
Δ WT.			0.4132	0.4154	0.2090		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 1037.6 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 28 (~~Inlet, Outlet~~) BLR OUT LOCATION Side C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			59	52	32		
DATE WT.			—	—	—		
TARE WT.	1		63.5539	50.4391	.6410		
	2		63.5545	50.4391	.6413		
	3		63.5543	50.4392	.6412		
	4		—	—	—		
AVG.			63.5542	50.4391	.6412		
POST TEST WTS.							
	1		64.1107	88.9939	.8405		
	2		64.1119	88.9938	.8402		
	3		64.1125	88.9941	—		
	4		—	—	—		
AVG.			64.1117	88.9939	.8403		
Δ WT.			0.5575	38.5548	0.1991		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 39,311.4 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 28 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			63	53	33		
DATE WT.			—	—	—		
TARE WT.	1		95.9837	50.1614	.6393		
	2		95.9842	50.1617	.6395		
	3		95.9843	50.1618	.6395		
	4		—	—	—		
AVG.			95.9841	50.1616	.6394		
POST TEST WTS.							
	1		96.2392	50.6300	.8632		
	2		96.2392	50.6303	.8631		
	3		96.2393	50.6302	—		
	4		—	—	—		
AVG.			96.2392	50.6302	.8631		
Δ WT.			0.2551	0.4686	0.2237		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 947.4 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 29 BLR OUT (~~Inlet, Outlet~~) LOCATION Sit C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			64	54	34		
DATE WT.			—	—	—		
TARE WT.	1		97.0322	50.3008	.6539		
	2		97.0315	50.3003	.6545		
	3		97.0313	50.3003	.6542		
	4		—	—	—		
AVG.			97.0317	50.3005	.6542		
POST TEST WTS.							
	1		97.3813	94.9098	.8354		
	2		97.3811	~~94.9276~~	.8354		
	3		97.3810	94.9095	.8357		
	4		—	—	—		
AVG.			97.3811	94.9097	.8355		
Δ WT.			0.3494	44.6092	0.1813		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 45139.9 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 29 MECH OUT (~~Inlet, Outlet~~) LOCATION Side C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			66	61	35		
DATE WT.			—	—	—		
TARE WT.	1		102.1525	50.3298	.6672		
	2		102.1519	50.3293	.6675		
	3		102.1518	50.3295	.6673		
	4		—	—	—		
AVG.			102.1520	50.3295	.6673		
POST TEST WTS.							
	1		102.3281	50.7041	.8502		
	2		102.3281	50.7045	.8500		
	3		102.3282	50.7048	.8501		
	4		—	—	—		
AVG.			102.3281	50.7045	.8501		
Δ WT.			0.1761	0.3750	0.1828		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 733.9 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 35 (~~Inlet, Outlet~~) BLROUT LOCATION Silk C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			62	60	36		
DATE WT.			—	—	—		
TARE WT.	1		95.6523	69.0099	.6721		
	2		95.6535	69.0094	.6722		
	3		95.6533	69.0093	.6723		
	4		—	—	—		
AVG.			95.6530	69.0095	.6722		
POST TEST WTS.							
	1		95.9551	78.5116	.7929		
	2		95.9550	78.5110	.7918		
	3		95.9552	78.5120	.7918		
	4		—	—	—		
AVG.			95.9551	78.5115	.7918		
Δ WT.			0.3021	9.5020	0.1196		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 9923.7 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 35 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			72		37		
DATE WT.			—		—		
TARE WT.	1		64.0662		.6841		
	2		64.0653		.6843		
	3		64.0649		.6843		
	4		—		—		
AVG.			64.0655		.6842		
POST TEST WTS.							
	1		64.1837		.7757		
	2		64.1836		.7765		
	3		64.1842		—		
	4		—		—		
AVG.			64.1838		.7761		
Δ WT.			0.1183		0.0919		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 210.2 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 36 BLR out (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			73	67	38		
DATE WT.			—	—	—		
TARE WT.	1		64.5854	50.1601	.6737		
	2		64.5845	50.1603	.6737		
	3		64.5841	50.1603	.6738		
	4		—	—	—		
AVG.			64.5846	50.1602	.6737		

POST TEST WTS.

	1		64.8007	60.1646	.8235		
	2		64.8004	60.1649	.8220		
	3		64.8008	60.1649	—		
	4		—	—	—		
AVG.			64.8006	60.1648	.8228		
Δ WT.			0.2160	10.0046	0.1491		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 10,369.7 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 36 MECH OUT (~~Inlet, Outlet~~) LOCATION Sik C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			74	68	39		
DATE WT.			—	—	—		
TARE WT.	1		69.0101	49.6415	.6787		
	2		69.0094	49.6415	.6788		
	3		69.0089	49.6416	.6788		
	4		—	—	—		
AVG.			69.0095	49.6415	.6788		
POST TEST WTS.							
	1		69.2811	49.7442	.8689		
	2		69.2807	49.7464	.8681		
	3		69.2810	49.7465	—		
	4		—	—	—		
AVG.			69.2809	49.7457	.8685		
Δ WT.			0.2714	0.1042	0.1897		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 565.3 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 40 BLR OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			75	65	40		
DATE WT.			—	—	—		
TARE WT.	1		69.5646	50.4397	.6752		
	2		69.5642	50.4396	.6753		
	3		69.5635	50.4399	.6753		
	4		—	—	—		
AVG.			69.5641	50.4397	.6753		
POST TEST WTS.							
	1		69.7629	58.3962	~~.8196~~		
	2		69.7627	58.3989	.8170		
	3		69.7632	58.3990	—		
	4		—	—	—		
AVG.			69.7629	58.3980	.8170		
Δ WT.			0.1988	7.9583	0.1417		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 8298.8 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 40 MECH OUT (~~Inlet, Outlet~~) LOCATION Sik C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			76	69	41		
DATE WT.			—	—	—		
TARE WT.	1		63.5551	50.3082	.6969		
	2		63.5544	50.3076	.6969		
	3		63.5542	50.3077	.6970		
	4		—	—	—		
AVG.			63.5546	50.3078	.6969		
POST TEST WTS.							
	1		63.8039	50.3866	.8774		
	2		63.8040	50.3881	.8664		
	3		63.8054	50.3880	—		
	4		—	—	—		
AVG.			63.8044	50.3876	.8669		
Δ WT.			0.2498	0.0798	0.1700		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 499.6 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 41 BLROUT (~~Inlet, Outlet~~) LOCATION Side C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			79	70	42		
DATE WT.			—	—	—		
TARE WT.	1		97.0340	67.8389	.6751		
	2		97.0327	67.8393	.6752		
	3		97.0324	67.8393	.6752		
	4		—	—	—		
AVG.			97.0330	67.8392	.6752		
POST TEST WTS.							
	1		97.3548	79.2829	.8146		
	2		97.3548	79.2842	.8135		
	3		97.3546	79.2850	—		
	4		—	—	—		
AVG.			97.3547	79.2840	.8135		
Δ WT.			0.3217	11.4448	0.1383		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 11,904.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 41 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			80	71	43		
DATE WT.			—	—	—		
TARE WT.	1		102.1535	50.2996	.6762		
	2		102.1539	50.3000	.6763		
	3		102.1537	50.2998	.6764		
	4		—	—	—		
AVG.			102.1537	50.2998	.6763		
POST TEST WTS.							
	1		102.3000	50.3329	~~.7970~~		
	2		102.3005	50.3341	.7965		
	3		102.3006	50.3349	—		
	4		—	—	—		
AVG.			102.3004	50.3340	.7965		
Δ WT.			0.1467	0.0342	0.1202		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 301.1 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 42 BLROUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			81	77	44		
DATE WT.			—	—	—		
TARE WT.	1		95.9853	95.6525	.6716		
	2		95.9850	95.6521	.6717		
	3		95.9847	95.6522	.6717		
	4		—	—	—		
AVG.			95.9850	95.6523	.6717		

POST TEST WTS.

	1		96.2511	129.8533	~~.9625~~		
	2		96.2509	129.8535	.9617		
	3		96.2499	129.8536	—		
	4		—	—	—		
AVG.			96.2506	129.8535	.9617		
Δ WT.			0.2656	34.2012	0.2900		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 34,756.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 4/2 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			84	78	45		
DATE WT.			—	—	—		
TARE WT.	1		64.0647	50.3293	.6796		
	2		64.0640	50.3294	.6795		
	3		64.0642	50.3293	.6795		
	4		—	—	—		
AVG.			64.0643	50.3293	.6795		
POST TEST WTS.							
	1		64.3212	51.2851	~~.9969~~		
	2		64.3213	51.2858	.9953		
	3		64.3215	51.2859	—		
	4		—	—	—		
AVG.			64.3213	51.2856	.9953		
Δ WT.			0.2570	0.9563	0.3158		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 1529.1 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 43 BLR MT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			85	82	46		
DATE WT.			—	—	—		
TARE WT.	1		95.6547	49.6432	.6697		
	2		95.6537	49.6434	.6698		
	3		95.6540	49.6434	.6698		
	4		—	—	—		
AVG.			95.6541	49.6433	.6698		
POST TEST WTS.							
	1		96.0961	68.3185	~~.8850~~		
	2		96.0966	68.3190	.8834		
	3		96.0968	68.3191	—		
	4		—	—	—		
AVG.			96.0965	68.3189	.8834		
Δ WT.			0.4424	18.6756	0.2136		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 19,331.6 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 43 MECH OUT (~~Inlet, Outlet~~) LOCATION Site C

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			86	83	47		
DATE WT.			—	—	—		
TARE WT.	1		69.0082	50.3086	.6625		
	2		69.0081	50.3085	.6626		
	3		69.0075	50.3079	.6627		
	4		—	—	—		
AVG.			69.0079	50.3083	.6626		
POST TEST WTS.							
	1		69.2344	50.6136	.9170		
	2		69.2344	50.6141	.9131		
	3		69.2348	50.6142	—		
	4		—	—	—		
AVG.			69.2345	50.6140	.9131		
Δ WT.			0.2266	0.3057	0.2505		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 782.8 mgm REMARKS: _____

8830-5 rev.

SECTION 3.0

GASEOUS DATA

		PAGE
3.1	GASEOUS EMISSION SUMMARY	238
3.2	GASEOUS EMISSIONS DATA	243
3.3	SOx DATA SUMMARY	288
3.4	SOx DATA SHEET	289

GASEOUS EMISSION SUMMARY

Location: ABMA Site C

Fuel: Eastern Low Fusion

TEST NO.	DATE	LOAD %	CONDITIONS	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	NO_2 ppm Wet	HC ppm Wet	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
1	4-13-78	60.0	—	7.3	12.6	43	274									Part-MECH out
5A	4-20-78	58.9	High O_2	9.3	9.7	62	378			8.9	10.2	52	431			
5B			MED O_2	8.0	11.2	48	360			8.1	10.9	42	362			
5C			Low O_2	7.2	11.8	45	337			6.9	11.9	57	306			
6A	4-20-78	55.8	Low O_2	8.8	10.2	48	303			8.2	10.9	56	346			
B			Med O_2	10.1	9.2	132	338			9.5	9.8	70	373			
C			High O_2	11.5	7.8	171	418			10.8	9.0	70	389			
7A	4-21-78	56.3	Normal OFA	9.2	10.1	57	316			9.2	10.0	48	338			
B			Front OFA Low	9.2	10.2	48	321			9.2	10.2	48	351			
C			REAR OFA Low	9.6	10.2	55	308			9.4	10.1	54	322			
D			Lower OFA low	9.2	10.2	57	290			8.8	10.6	51	295			
8	4-25-78	42.0	Low Load Test	10.2	8.8	65	353			10.3	8.6	59	355			Part. B/R out
9	5-1-78	54.4	MED OFA TEST	8.9	10.5	66	288									Part. Blr + D.C out
10	5-3-78	56.6	No reinjection	9.1	10.1	55	356									Part. Blr + D.C. out
11	5-3-78	56.6	BLR Hpr reinjection only.	9.1	10.0	53	333									Part Blr + DC. out

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

REV.

GASEOUS EMISSION SUMMARY

Location: ABMA Site C

Fuel: Eastern Low Fusion

TEST NO.	DATE	LOAD %	CONDITIONS	Boiler Outlet O_2 % Dry	Boiler Outlet CO_2 % Dry	Boiler Outlet CO ppm Dry	Boiler Outlet NO ppm Dry	Boiler Outlet NO_2 ppm Wet	Boiler Outlet HC ppm Wet	Multiclone Outlet O_2 % Dry	Multiclone Outlet CO_2 % Dry	Multiclone Outlet CO ppm Dry	Multiclone Outlet NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
12	5-4-78	56.6	High balanced O.F.A.	8.9	10.1	53	273			8.1	10.8	[illegible]	286			Part-Blr + DC out
13	5-4-78	55.2	Low balanced OFA	8.9	10.3	103	30			7.8	11.4	89	239			Part.-Blr + D.C. out
14	5-9-78	56.5	Bias Upper OFA	9.2	10.0	49	326			9.0	10.4	45	343			Part. Blr + DC. out
15	5-10-78	55.5	Bias Lower OFA	9.1	10.1	53	328			8.7	10.6	44	337			Part-Blr + DC. out
16	5-11-78	56.4	Bias Front OFA	8.7	10.4	37	319			8.9	10.6	30	328			Part-Blr + DC out
17A	5-12-78	46.2	High O_2	10.4	8.9	37	282			10.3	9.2	42	286			Gaseous
17B			Med O_2	9.4	10.1	23	244			9.2	10.2	23	268			
17C			Low O_2	8.3	11.0	21	227			7.9	11.4	25	241			
18A	5-12-78	46.2	High O_2	9.8	10.0	37	300			9.5	10.0	47	275			
18B			Med O_2	8.6	11.0	32	233			8.4	11.1	43	243			
18C			Low O_2	7.4	12.0	26	212			7.0	11.9	58	219			
19	5-12-78	56.0	Bias Rear OFA	8.7	10.4	44	326			8.6	10.5	43	320			Part Blr out + DC out
20	5-13-78	33.6	NORMAL	11.0	8.1	68	331			10.7	8.6	70	333			Part Blr + DC out
21A	5-16-78	46.7	High O_2	10.3	9.2	296	355			9.9	9.8	260	399			WESTERN COAL Gaseous
21B			Med. O_2	9.2	10.0	168	352			9.0	11.0	184	391			
21C			Low O_2	8.1	11.6	154	350			8.1	10.8	163	470			

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

GASEOUS EMISSION SUMMARY

Location: ABMA Site C

Fuel: Western Coal

TEST NO.	DATE	LOAD %	CONDITIONS	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	NO_2 ppm Wet	HC ppm Wet	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
22A	5-16-78	46.7	Med O_2	8.8	11.2	259	311			8.4	11.4	215	329			Gaseous
22B			Low O_2	7.2	12.8	144	288			8.4	11.4	215	315			
22C			High O_2	10.0	9.4	361	361			9.5	10.2	298	377			
23	5-17-78	60.6	High OFA	8.6	10.9	311	387			8.5	11.1	285	383			Part Blr + DC out
24	5-18-78	59.8	Low OFA	8.7	10.6	488	372			8.5	11.0	433	375			Part Blr + DC out
25	5-19-78	47.6	140 klbs/hr.	8.6	11.2	173	358			8.5	11.2	133	339			Part Blr + DC out
26	5-23-78	60.3	Bias Upper OFA	9.9	9.8	395	394			9.5	10.0	329	418			Part Blr + DC out
27	5-24-78	61.0	Bias Lower OFA	8.9	10.5	287	387			8.7	10.6	220	400			Part Blr + D.C. out
28	5-25-78	60.3	Bias Front OFA	9.0	10.6	567	395			9.1	10.6	478	385			Part Blr + DC. out
29	5-26-78	60.7	Bias Rear OFA	8.4	10.9	323	408			8.6	10.9	364	419			Part Blr + DC. out
30	5-29-78	35.6	High O_2	11.5	8.2	232	400			11.7	7.8	272	409			Gaseous
			Med O_2	11.0	8.6	198	379									
			Low O_2	10.0	9.6	151	361			10.0	9.6	151	377			
31	5-29-78	23.6	Low O_2	9.0	10.8	97	271			9.1	10.6	121	258			
			Med O_2	10.0	10.0	151	312			10.2	9.6	184	301			
			High O_2	11.0	8.9	199	325			11.0	8.9	253	353			

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

GASEOUS EMISSION SUMMARY

Location: ABMA Site C

Fuel: Western (32-40), Eastern High Fusion (41-43)

TEST NO.	DATE	LOAD %	CONDITIONS	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	NO_2 ppm Wet	HC ppm Wet	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
32	5-30-78	58.2	Low O_2	7.2	12.2	163	301			7.5	11.8	194	321			Gaseous
			Med O_2	8.3	11.2	249	341			8.4	11.0	261	351			
			High O_2	9.1	10.6	334	334			9.7	9.6	448	399			
33	5-30-78	58.6	Low O_2	8.1	10.6	266	322			7.5	11.4	254	307			
			Med O_2	9.0	10.0	421	346			8.6	10.4	393	364			
			High O_2	10.7	8.6	702	421			9.5	9.2	479	424			
34	5-30-78	57.8	Bias Front OFA	8.6	11.0	327	357			8.8	11.2	325	385			
			Bias Rear OFA	8.5	11.0	296	375			8.4	11.4	258	394			
			Bias Upper OFA	8.4	11.5	294	337			8.3	11.6	270	362			
			Bias Lower OFA	8.5	11.5	281	375			8.8	11.2	288	399			
35	5-31-78	33.4	High O.F.A norm. O_2	10.6	9.0	182	360			10.8	8.9	164	323			Part Blr + D.C. out
36	6-1-78	59.5	No Reinjection	8.1	11.4	247	357			8.0	11.5	268	365			Part Blr + DC out
40	6-2-78	62.1	Blr. Hpr. Reinj. only	8.3	11.3	280	341			8.4	11.3	240	353			Part Blr + DC out
																EAST HIGH FUSION
41	6-7-78	35.1	High OFA	11.3	8.3	57	383			11.4	8.5	75	365			Part Blr + DC. out
42	6-9-78	60.1	High OFA	9.4	10.6	132	289			9.5	10.2	158	395			Part Blr + DC. out
43	6-13-78	47.4	High OFA	9.8	10.4	45	374			9.7	10.6	40	364			Part Blr + DC. out

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

GASEOUS EMISSION SUMMARY

Location: ABMA Site C

Fuel:

TEST NO.	DATE	LOAD %	CONDITIONS	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	NO_2 ppm Wet	HC ppm Wet	O_2 % Dry	CO_2 % Dry	CO ppm Dry	NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
44	6-15-78	59.1	High OFA	8.9	10.9	263	385			8.8	11.1	244	414	969		SASS-SOX East High Fusion
45	6-17-78	59.2	High O.F.A	8.3	11.1	272	375	-10	275	8.4	11.1	266	402	805		SASS-SOX Brink WESTERN
46	6-20-78	60.2	High O.F.A.	9.0	10.2	57	436	-13	—	9.1	10.1	55	410			SASS-SOX East. Low Fusion
47	6-29-78	50.0	High O.F.A.	9.8	9.5	44	407									COAL Sizing
48	6-29-78	56.3	Vary O.F.A (high)	9.7	9.7	35	398									GASEOUS
			normal OFA	9.3	10.1	33	397									
			Low O.F.A	8.3	10.9	61	379									
49	7-5-78	35.3	High O_2	12.5	7.2	139	373			11.8	7.3	98	372			
			Med O_2	10.5	8.6	52	336			10.5	8.6	43	353			
			Low O_2	9.0	9.8	30	308			9.0	9.8	27	316			
50	7-5-78	35.3	High O_2	10.9	8.8	72	358			10.8	8.8	71	372			
			Med O_2	8.9	10.3	67	283			8.8	10.4	74	303			
			Low O_2	7.2	11.6	120	216			7.1	11.7	119	227			

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 1

DATE 4-13-78

FUEL EASTERN LOW FUSION

LOAD 100 %

CONDITIONS 7.3 Excess O_2

DATA TAKEN BY PLL

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
1	14:13	8.0	11.4	32	44	250	346									
2	14:23	8.2	11.3	28	39	264	371									
3	14:28	8.2	11.3	32	45	245	345									
4	14:33	6.9	12.5	55	70	220	281									
5	14:41	6.1	13.4	89	108	220	266									
6	14:47	7.0	12.7	300	386	195	251									
1-6	15:00	7.3	12.4	40	53	220	289									
1-3	15:05	6.7	13.6	18	23	255	321									
4-6	15:14	7.0	12.9	18	23	235	302									
1-6	15:37	7.3	12.7	25	33	197	259									
1	15:45	7.7	12.0	25	34	275	305									

AVERAGES

BLR out		7.3	12.4		74		283									
1-6		7.3	12.6		43		274									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 5

DATE 4-20-78

FUEL EASTERN LOW FUSION

LOAD 100%

CONDITIONS Vary O2

DATA TAKEN BY JD

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
1-6	10:25	9.3	9.7	40	62	245	378									75% Excess Air
7	10:48	8.9	10.2	35	52	289	431									69% "
1-6	11:20	8.1	11.2	35	48	260	360									58% "
7	11:38	8.1	10.9	30	42	259	362									59% "
1-6	12:20	7.2	11.8	35	45	258	337									49% "
7	12:27	6.9	11.9	45	57	240	306									46% "

AVERAGES

1-6		8.2	10.9		52		358									
7		8.0	11.0		50		366									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 6

DATE 4-20-78

FUEL Eastern Low Fusion

LOAD 100 %

CONDITIONS vary - O_2

DATA TAKEN BY JO

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
1-6	14:45	8.8	10.2	33	48	205	303									68% Excess Air
7	15:00	8.2	10.9	40	56	246	346									61% "
1-6	15:21	10.1	9.2	80	132	204	338									87% "
7	15:49	9.5	9.8	45	70	238	373									78% "
1-6	16:05	11.5	7.8	90	171	220	418									113% "
7	16:16	10.8	9.0	40	70	220	389									101% "

AVERAGES

1-6	—	10.1	9.1		117		353									O_2 was varied Do NOT USE Average
7	—	9.5	9.9		65		369									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 7

DATE 4-21-78

FUEL Eastern Low Fusion

LOAD 100 %

CONDITIONS Vary O_2 - Vary O.F.A.

DATA TAKEN BY JD

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1-6	9:15	9.2	10.1	37.5	57	207	316					NORMAL OFA				74% Excess Air
7	9:29	9.2	10.0	32	48	221	338					NORMAL OFA				74% "
1-6	9:47	9.2	10.2	32	48	210	321					FRONT OFA LOW				74% "
7	10:00	9.2	10.2	32	48	230	351					FRONT OFA LOW				74% "
1-6	10:17	9.6	10.2	35	55	195	308					REAR OFA LOW				80% "
7	10:38	9.4	10.1	35	54	207	322					REAR OFA LOW				77% "
1-6	10:55	9.2	10.2	37.5	57	190	290					LOW OFA LOW				74% "
7	11:20	8.8	10.6	35	51	200	295					LOW OFA LOW				69% "
1-6	11:45	9.8	10.0	44	70	185	298					———				83% "

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 8

DATE 4-25-78

FUEL EASTERN LOW FUSION

LOAD 125 K#/hr.

CONDITIONS NORMAL - O_2

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1-6	15:00	10.3	8.7	35	59	190	321									
1-5	15:35	10.3	8.6	38	64	195	329									PARTICULATES BLROUT
1-5	16:00	10.0	9.1	55	90	210	345									
1-5	16:35	10.3	8.7	35	59	205	346									
MECH	17:00	10.3	8.6	35	59	210	355									
1-5	17:30	10.3	8.8	35	59	225	380									
1-5	17:55	10.0	9.0	35	57	240	394									

AVERAGES

BLROUT	—	10.2	8.8		65		353									EXCESS AIR 88 %
MECH	—	10.3	8.6		59		355									90 %

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 9

DATE 5-1-78

FUEL EASTERN LOW FUSION

LOAD MAX

CONDITIONS NORMAL O_2 - OFA Med - Balanced

DATA TAKEN BY PLL

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	13:10	8.8	10.6	37	55	190	280									Excess Air 89%
2	13:35	9.8	9.6	58	93	205	329									
3	13:42	9.35	9.85	37	57	205	317									
6	13:46	8.4	11.0	37	53	190	271									
5	13:50	7.55	11.6	37	50	205	274									
4	13:57	7.9	11.4	28	38	210	289									
2-6	14:08	8.9	10.6	52	77	190	283									
6	14:23	8.15	11.2	37	52	198	277									
5	14:30	7.1	12.2	44	57	227	294									
4	14:40	8.1	10.6	37	54	200	290									
3	14:43	8.8	10.6	60	89	198	292									
2	14:51	9.2	10.0	55	84	200	305									
2-6	15:06	9.0	10.4	44	66	200	300									
AVERAGES																
INDIVIDUAL PROBES	—	8.5	10.8		63		294									65%
2-6	—	8.9	10.5		66		288									70%

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 10

DATE 5-3-78

FUEL EASTERN LOW FUSION

LOAD MAX

CONDITIONS 9.0% O_2 - NO FLYASH Reinjection

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	9:50	8.8	10.4	40	59	250	370									
2-6	10:00	9.0	10.2	35	53	270	406									
2-6	10:35	8.9	10.3	26	39	250	372									
2-6	11:12	9.4	9.8	35	54	205	319									
2-6	12:18	9.5	9.6	44	69	200	314									
AVERAGES																
2-6	—	9.12	10.06		55		356									Excess AIR = 72%
																T_{dry} = 81
																T_{wet} = 67
																RH = 48%

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 11

DATE 5-3-78

FUEL EASTERN LOW FUSION

LOAD MAX

CONDITIONS 9% O_2 - BLR Hopper Reinjection only

DATA TAKEN BY PLL

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	16:26	8.9	10.2	35	52	239	356									
2-6	16:57	8.95	10.0	37	55	238	356									
2-6	17:30	9.0	9.8	35	53	225	338									
2-6	17:55	9.5	9.8	35	55	200	313									
2-6	18:22	9.0	10.0	32	48	201	302									

AVERAGES

2-6	—	9.07	9.96		53		333									Excess Air - 72%

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO Special

DATE 5-4-78

FUEL Eastern Low Fusion

LOAD

CONDITIONS O_2 TRAVERSE

DATA TAKEN BY PLL

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
6	13:38	9.85	9.2	32	52	194	313									
5	13:45	6.6	12.0	32	40	264	330									
4	13:49	7.05	11.5	19	25	250	323									
3	13:54	8.55	10.1	32	46	228	330									
2	14:00	9.2	9.8	37	56	223	340									
1	14:07	9.6	9.5	44	69	206	325									

AVERAGES

Individual	—	8.5	10.4		48		327									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 12

DATE 5-4-78

{ 2-6 - BLR OUT
7 - MECH (D.C)

FUEL EASTERN LOW FUSION

LOAD MAX

CONDITIONS 9% O_2 — 20" OFA Balanced

DATA TAKEN BY PLL

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:55	9.1	10.0	32	48	179	271									
7	11:15	8.0	11.0	37	51	205	284									
2-6	11:26	9.15	9.8	37	56	179	272									
7	11:38	8.35	10.5	37	53	200	285									
2-6	12:00	8.7	10.1	37	54	187	274									
7	12:18	7.85	10.9	36	49	211	289									
2-6	12:40	8.6	10.2	33	48	184	267	—	—	—	—	NOT INCLUDED in AVG - RECAL.				
2-6	13:05	8.8	10.3	37	55	214	316									CO_2 OK NO - 5.5 ppm hi @ 250 CO - 8 ppm low @ 360
7	13:32	8.1	10.9	35	49	231	322									O_2 - .2% low @ 9.74

AVERAGES

2-6	—	8.9	10.1		53		273									EXCESS AIR 69%
7	—	8.1	10.8		51		286									" 59%

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 13

DATE 5-4-78

PROBES 2-6 - BLR OUT
PROBE 7 - MECH (D.C)

FUEL EASTERN LOW FUSION

LOAD MAX

CONDITIONS 9% O_2 - Low balanced OFA (5")

DATA TAKEN BY PLL

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	17:00	9.3	9.8	48	74	155	238									
2-6	17:15	8.5	10.5	48	69	153	220									
2-6	17:55	8.1	11.0	120	167	164	229									
2-6	18:27	9.15	10.1	80	122	154	234									
7	18:42	7.8	11.3	65	89	175	239									
2-6	18:53	9.2	10.05	55	84	150	229									
7	19:00	7.7	11.4	65	88	176	239									

AVERAGES

2-6	BLR OUT	8.9	10.3		103		230									
7	MECH OUT	7.8	11.4		89		239									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 14

DATE 5-9-78

BLR OUT - PROBES 2-6
MULTICLONE — 7

FUEL EASTERN LOW FUSION

LOAD 93%

CONDITIONS 9.2 O_2 - BIAS UPPER OFA.

DATA TAKEN BY JEC

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	14:00	9.0	10.0	30	45	190	286									P_{BAR} - 29.12
																RH - 52%
3	14:08	8.9	10.2	30	45	230	343									
4	14:12	8.8	10.4	30	44	220	325									
5	14:22	7.8	11.2	40	55	225	307									
6	14:32	10.4	9.0	30	51	180	307									
2	14:42	8.8	10.2	25	37	240	355									
2-6	—	9.4	10.0	30	47	200	311									
3	15:07	9.7	9.8	35	56	230	368									
7	15:18	9.2	10.4	30	46	220	337									
2-6	15:35	9.9	9.8	40	65	200	325									
2-6	16:10	9.2	10.2	30	46	220	337									
7	16:20	8.8	10.4	30	44	235	348									

AVERAGES

BLR OUT 2-6	—	9.2	10.0		49		326									
MULTICLONE 7	—	9.0	10.4		45		343									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 15

DATE 5-10-78

FUEL EASTERN LOW FUSION

LOAD

CONDITIONS

DATA TAKEN BY J.D.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	14:35	9.5	10.0	30	47	250	314									
2	14:47	10.2	8.6	40	66	209	349									
3	15:00	10.0	9.4	30	49	220	361									
4	15:17	9.7	9.6	40	64	210	335									
5	15:27	8.8	10.4	30	44	230	340									
6	15:40	8.3	11.2	30	42	230	326									
2-6	16:00	9.3	10.2	30	46	200	308									
2	16:20	9.6	9.6	50	79	210	332									
3	16:35	9.5	9.4	50	78	220	345									
4	16:57	9.5	9.8	30	47	220	345									
5	17:12	8.5	11.0	20	29	230	332									
6	17:25	8.2	11.0	30	42	220	310									
7	17:40	8.7	10.6	30	44	230	337									
2-6	18:00	8.7	9.6	40	58	220	322									
2	18:20	9.5	9.6	50	78	220	345									
3	18:40	9.5	9.6	30	47	230	361									
4	19:05	8.2	11.0	30	42	200	281									
5	19:23	7.7	11.4	30	41	195	264									
AVERAGES																
BLR OUT	—	9.1	10.1		53		328									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 16

DATE 5-11-78

FUEL EASTERN LOW FUSION

LOAD

CONDITIONS

DATA TAKEN BY JD

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	7:47	8.5	10.8	30	43	190	274									
2	8:01	9.2	10.0	20	31	195	298									
3	8:11	9.7	9.4	30	48	190	304									
4	8:22	9.0	10.0	25	38	200	338									
5	8:35	7.5	11.4	20	27	240	321									
6	8:45	6.3	12.0	25	31	240	294									
2-6	9:10	8.7	10.6	25	37	220	323									
2	9:23	9.2	10.0	25	38	240	367									
3	9:26	9.5	9.6	20	31	240	376									
7	9:50	8.9	10.6	20	30	220	328									
4	10:15	9.6	9.8	30	48	180	285									

AVERAGES

BLR OUT	—	8.7	10.4		37		319									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 17

DATE 5-12-78

PROBES 2-6 - BLR OUT
PROBE 7 - MULTICLONE

FUEL EASTERN LOW FUSION

LOAD 140 KW/hr.

CONDITIONS - vary O_2

DATA TAKEN BY JEC

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	10:10	10.5	9.0	17	29	150	258									
2	10:15	10.75	8.6	32	56	160	282									
3	10:30	10.75	8.4	20	35	170	300									
4	10:38	10.5	8.8	20	34	160	275									
5	10:45	10.1	9.0	18	30	170	282									
6	10:50	10.25	9.2	20	34	170	288									
7	10:55	10.25	9.2	25	42	170	286									
2-6	11:10	9.4	10.1	15	23	160	244									
7	11:20	9.2	10.2	15	23	175	268									
2-6	11:37	8.3	11.0	15	21	140	227									
7	11:50	7.9	11.4	18	25	175	241									

AVERAGES

BLR OUT	—	10.4	8.9		37		282									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 18

DATE 5-12-78

FUEL EASTERN LOW FUSION

LOAD

CONDITIONS

DATA TAKEN BY JEC

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	12:00	7.4	12.0	20	26	160	212									
7	12:10	7.0	11.9	45	58	170	219									
2-6	12:20	8.6	11.0	22	32	160	233									
7	12:30	8.4	11.1	30	43	170	243									
2-6	12:40	9.75	10.0	20	37	160	300									
7	12:50	9.5	10.0	30	47	175	275									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 19

DATE 5-12-78

BLROUT - PROBES - 2-6
MECH — PROBE - 7

FUEL EASTERN LOW FUSION

LOAD

CONDITIONS AS FOUND

DATA TAKEN BY

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	14:15	8.8	10.4	30	44	220	325									P_{BAR} - 29.19
												At CD FAN				T_{dry} - 68°F
7	14:30	8.6	10.8	28	41	230	335									T_{wet} - 62°F
2	14:50	9.4	10.0	40	62	230	358									
3	15:05	8.7	10.2	28	41	240	352									
4	15:20	7.8	10.9	15	20	240	328									
5	15:40	8.4	10.8	28	40	220	315									
7	15:55	8.6	10.2	30	44	210	306									
6	16:10	8.8	10.2	40	59	210	311									
2-6	16:25	8.3	10.2	28	41	200	296									

AVERAGES

BLROUT	—	8.6	10.4		44		326									
MECH	—	8.6	10.5		43		320									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 20

DATE 5-13-78

FUEL Eastern Low Fusion

LOAD 160 Klbs/hr.

CONDITIONS 11.0% O_2 - NORMAL

DATA TAKEN BY JD

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	9:12	10.7	8.3	30	53	175	307									RH = 49%
2	9:25	11.0	8.1	35	63	185	334									
3	9:40	10.7	8.2	30	53	190	333									
4	9:55	10.7	8.2	20	35	205	360									
5	10:11	10.7	8.2	30	53	210	368									
6	10:32	11.0	8.4	40	72	200	361									
7	10:45	10.7	8.6	40	70	190	333									
2-6	11:00	11.0	8.4	30	54	160	289									
2	11:16	12.0	7.4	65	131	150	301									
3	11:30	11.7	7.6	50	97	170	330									

AVERAGES

BLR OUT	—	11.0	8.1		68		331									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 21

DATE 5-16-78

BLR OUT - 2-6 PROBES
Multiclone - #7 - PROBE

FUEL western

LOAD 140 Klbs/hr.

CONDITIONS High OFA - vary O_2

DATA TAKEN BY SU

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	11:32	10.3	9.2	175	296	210	355									
7	11:52	9.9	9.8	160	260	245	399									
2-6	12:30	9.2	10.0	110	168	230	352									
7	12:59	9.0	11.0	122	184	260	391									
2-6	13:14	8.1	11.6	110	154	250	350									
7	13:07	8.1	10.8	92	163	265	470									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 22

DATE 5-16-78

FUEL WESTERN

LOAD 140 klbs/hr.

CONDITIONS Low OFA - O_2 vary

DATA TAKEN BY

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	15:02	8.8	11.2	175	259	210	311									
7	15:25	8.4	11.4	150	215	230	329									
2-6	15:55	7.2	12.8	110	144	220	288									
7	16:07	8.4	11.4	150	215	220	315									
2-6	16:40	10.0	9.4	220	361	220	361									
7	16:50	9.5	10.2	190	298	240	377									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15.00

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 23

DATE 5-17-78

BLR OUT PROBES 2-6
MULTICLONE — 7

FUEL WESTERN

LOAD MAX

CONDITIONS High OFA - 8.5% O_2

DATA TAKEN BY SU

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	9:30	8.5	11.2	175	253	250	361									T_{Dry} = 75
																T_{Wet} = 66
7	9:46	8.4	11.2	190	272	280	401									RH = 63%
2	10:04	9.2	10.2	280	428	280	428									
3	10:20	9.9	9.4	350	570	260	423									
4	10:39	9.5	10.0	220	345	280	440									
5	10:54	7.9	11.4	122	168	280	386									
6	11:14	6.7	12.8	150	189	270	336									
7	12:05	8.6	11.0	205	298	250	364									
2-6	12:16	8.2	11.2	160	226	240	338									
AVERAGES																
BLR OUT	—	8.6	10.9		311		387									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 24

DATE 5-18-78

FUEL WESTERN COAL

LOAD MAX

CONDITIONS O_2 - 8.5

DATA TAKEN BY S.U.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	10:00	8.8	10.6	330	488	260	385									T_{dry} = 84
																T_{wet} = 71
7	10:25	8.5	11.0	300	433	260	375									RH = 53%
2	10:54	9.8	9.6	380	613	220	355									
3	11:27	9.5	9.4	350	550	230	361									
4	11:40	8.3	11.2	280	398	260	369									
5	12:00	8.3	11.2	350	497	275	391									
6	12:17	7.1	12.0	280	363	300	389									
2-6	12:38	9.3	10.4	330	509	230	355									
7	12:48	9.5	11.2	270	424	240	377									

AVERAGES

BLR OUT	—	8.7	10.4		488		372									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 25

DATE 5-19-78

FUEL WESTERN COAL

LOAD 140 Klb/hr.

CONDITIONS Excess O_2 8.6

DATA TAKEN BY SH.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	10:53	8.8	11.1	122	180	195	288									T_{DRY} = 91
																T_{WET} = 76
6	11:10	8.0	12.0	92	128	220	305									RH = 50%
5	11:27	8.0	11.9	65	90	220	305									
4	11:55	9.1	10.5	92	140	210	318									
3	12:15	9.5	10.2	160	251	210	330									
2	12:30	8.9	11.0	175	261	230	343									
7	12:47	8.5	11.2	92	133	235	339									
2-6	13:05	8.2	11.7	116	163	195	275									

AVERAGES

BLR out	—	8.6	11.2		173		358									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE: C

TEST NO: 26

DATE: 5-23-78

BLR OUT PROBES - 2-6
MULTICLONE PROBE — 7

FUEL: WESTERN COAL

LOAD: MAX - 9% EXCESS O_2

CONDITIONS: BIAS Upper OFA.

DATA TAKEN BY: MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	14:00	9.1	10.5	280	425	215	326									PRETEST
2-6	14:45	9.5	10.1	270	424	270	424									T_{dry} = 76
7	15:00	9.6	10.0	190	301	280	443									T_{wet} = 65 RH = 58%
2-6	15:10	9.5	10.0	220	345	250	392									
7	15:35	9.5	10.0	227	356	250	392									
2	15:40	10.6	9.2	250	434	250	434									
3	16:00	10.75	9.3	280	494	255	450									
4	16:10	9.6	9.7	175	277	240	380									
5	16:25	10.1	9.7	220	365	225	373									
6	16:40	9.9	9.7	243	395	230	374									

AVERAGES

BLR OUT	—	9.9	9.8		395		394									
MULTICLONE	—	9.5	10.0		329		418									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 27

DATE 5-24-78

FUEL WESTERN COAL

LOAD 180 MW/M.

CONDITIONS 8.9% O_2 - BIAS LOWER OFA

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	11:30	9.3	10.4	240	370	270	417									T_{dry} = 80
7	11:50	8.6	10.6	190	276	295	429									T_{wet} = 66
6	12:05	7.3	11.6	150	197	298	392									RH = 48%
5	12:20	8.1	11.1	160	224	250	350									
4	12:45	9.5	10.2	185	290	225	353									
3	13:00	10.0	9.4	270	443	250	411									
2	13:15	10.1	9.8	280	464	270	448									
7	13:30	8.8	10.6	140	207	250	370									
2-6	13:55	8.3	10.8	110	156	260	369									
7	14:15	8.6	10.6	122	178	275	400									
2-6	14:30	8.2	10.8	110	155	255	359									

AVERAGES

BLRout	—	8.85	10.5		287		387									
MULTICLONE	—	8.7	10.6		220		400									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE: C

TEST NO: 28

DATE: 5-25-78

PROBES 2-6 - BLR OUT
PROBE 7 - MECH

FUEL: WESTERN COAL

LOAD: 180 Klbs/hr.

CONDITIONS: Front BiAS OFA

DATA TAKEN BY: MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	11:05	8.8	11.2	330	488	240	355									T_{dry} = 83
																T_{wet} = 71
6	11:35	6.4	13.0	110	136	315	389									RH = 56%
5	11:50	8.0	11.6	300	416	275	382									
* 4A	12:05	8.6	11.4	300	437	285	415									* PROBE PULLED
* 4B	12:20	9.8	10.0	350	564	245	395									* PROBE PULLED
3	12:30	10.1	9.2	440	729	240	398									
2	12:40	11.25	8.2	610	1132	240	445									
7	12:50	8.9	10.6	330	492	270	402									
2-6	13:10	9.4	10.1	405	630	245	381									
7	13:25	9.2	10.6	305	467	240	367									
AVERAGES																
BLR OUT	—	9.0	10.58		567		395									
MULTICLONE	—	9.05	10.6		478		385									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 29

DATE 5-26-78

FUEL WESTERN COAL

LOAD 180 Klbs/hr.

CONDITIONS BIAS REAR OFA

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	9:00	8.6	10.9	210	306	260	378									T_{dry} = 88
																T_{wet} = 76
7	9:25	8.4	11.0	220	315	280	401									RH = 60%
6	9:35	8.7	10.6	290	425	290	425									
5	9:55	7.2	11.4	155	203	300	392									
4	10:15	8.7	10.5	190	279	280	411									
3	10:25	9.4	10.0	155	241	270	420									
2	10:35	9.3	10.0	280	432	285	440									
4	10:45	7.3	11.6	140	184	305	401									
7	11:00	8.7	10.8	250	367	298	437									
5	12:10	7.7	11.6	190	258	290	393									
6	12:20	8.6	11.2	380	553	280	407									
7	12:30	8.7	11.0	280	411	285	418									
2-6	12:40	8.7	11.0	240	352	280	411									

AVERAGES

BLR OUT	—	8.4	10.9		323		408									
MULTICLONE	—	8.6	10.9		364		419									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 30

DATE 5-29-78

FUEL WESTERN COAL

LOAD 100 Klb/Hr.

CONDITIONS MAX OFA - VARY O_2

DATA TAKEN BY JD

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	11:33	11.5	8.2	122	232	210	400									
7	11:49	11.7	7.8	140	272	210	409									
2-6	12:05	11.0	8.6	110	198	210	379									
2-6	12:20	10.0	9.6	92	151	220	361									
7	12:38	10.0	9.6	92	151	230	377									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 31

DATE 5-29-78

FUEL WESTERN

LOAD 100 K lb/hr.

CONDITIONS VARY O_2

DATA TAKEN BY Min. OF. A

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	13:47	9.0	10.8	65	97	180	271									
7	14:05	9.1	10.6	80	121	170	258									
7	14:18	9.5	10.6	122	192	180	283									
2-6	14:31	10.0	10.0	92	151	190	312									
7	14:40	10.2	9.6	110	184	180	301									
2-6	15:03	11.0	8.9	110	199	180	325									
7	15:10	11.0	8.9	140	253	195	353									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 32

DATE 5-30-78

FUEL WESTERN COAL

LOAD MAX

CONDITIONS VARY-O_2 — MAX OFA.

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	9:45	8.3	11.2	175	249	240	341									Temp wet - 73
																Tdry - 91
7	10:00	8.4	11.0	182	261	245	351									RH - 42%
2-6	10:10	7.2	12.2	125	163	230	301									
7	10:25	7.5	11.8	145	194	240	321									
2-6	10:40	9.1	10.6	220	334	220	334									
7	11:00	9.7	9.6	280	448	250	399									
2-6	11:15	9.0	10.0	280	421	230	346									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 33

DATE 5-30-78

FUEL WESTERN COAL

LOAD MAX

CONDITIONS min. OFA

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
7	11:17	8.6	10.4	270	393	250	364									
2-6	11:35	8.1	10.6	190	266	230	322									
7	11:50	7.5	11.4	190	254	230	307									
2-6	12:15	10.7	8.6	400	702	240	421									
7	12:25	9.5	9.2	305	479	270	424									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 34

DATE 5-30-78

FUEL WESTERN COAL

LOAD MAX

CONDITIONS VARY O.F.A

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	14:45	8.6	11.0	225	327	245	357									BIAS FRONT
7	14:55	8.8	11.2	220	325	260	385									BIAS FRONT
2-6	15:05	8.5	11.0	205	296	260	375									BIAS REAR
7	15:20	8.4	11.4	180	258	275	394									BIAS REAR
2-6	15:30	8.4	11.5	205	294	235	337									BIAS UPPER
7	15:40	8.3	11.6	190	270	255	362									BIAS UPPER
2-6	15:50	8.5	11.5	195	281	260	375									BIAS LOWER
7	16:05	8.8	11.2	195	289	270	399									BIAS LOWER

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 35

DATE 5-31-78

FUEL WESTERN COAL

LOAD 100 klb/hr.

CONDITIONS High OFA. - 10.4% Excess O_2

DATA TAKEN BY MJ, SU

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:35	10.5	9.0	92	158	170	293									T_{dry} - 79
																T_w — 66
7	11:13	10.7	9.0	86	148	200	344									RH - 51%
2	11:25	11.3	8.4	145	270	180	335									
3	12:01	11.1	8.6	92	168	170	311									
2-6	12:20	10.75	8.7	110	194	170	300									
6	12:38	10.1	9.6	160	265	175	290									
5	12:51	10.0	9.7	65	107	180	296									
7	13:05	10.8	8.8	101	179	170	301									
4	13:24	10.6	8.9	65	113	160	278									

AVERAGES

BLR OUT	—	10.6	9.0		182		300									
MULTICLONE	—	10.75	8.9		163.5		322.5									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 36

DATE 5-1-78

FUEL WESTERN COAL

LOAD

CONDITIONS without Fly Reinjection

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	13:35	8.1	11.4	155	217	235	329									T_{dry} 86
7	14:05	7.5	11.6	160	214	255	341									T_{wet} 69
																RH - 43%
5	14:15	6.5	13.0	80	99	260	323									
4	14:25	8.3	11.2	150	213	265	376									
3	14:35	9.1	10.4	250	379	255	387									
2	14:45	8.9	10.5	220	328	270	403									
2-6	14:55	8.4	11.2	215	308	250	358									
7	15:40	8.0	11.6	195	271	270	375									
2-6	16:10	7.7	11.6	160	217	250	339									
7	16:30	8.0	11.4	190	264	255	354									

AVERAGES

BLR OUT	—	8.06	11.4		247		357								
MECH	—	8.0	11.5		268		364.5								

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 40

DATE 6-2-78

FUEL WESTERN COAL

LOAD 182 K#/hr.

CONDITIONS 8.3% EXCESS O_2 - BLR HOPPER Reinjection only

DATA TAKEN BY SU.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:54	7.9	11.6	180	248	240	330									T_{dry} - 92
																T_{wet} - 66
7	11:17	8.1	11.5	197	275	245	343									RH - 43%
3	11:35	9.5	9.8	290	455	240	377									
2	12:00	9.4	10.1	300	467	270	420									
2-6	12:26	8.7	11.0	212	311	240	352									
7	—	8.6	11.0	140	204	250	364									

AVERAGES

BLR OUT	—	8.3	11.3		280		341									
MECH	—	8.35	11.25		240		353									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 41

DATE 6-7-78

FUEL High Fusion

LOAD 150 X 10/hr.

CONDITIONS High OFA. — Excess O_2 11.2

DATA TAKEN BY J.D.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:37	11.2	8.2	35	64	220	405									
2	10:40	12.2	7.6	65	133	205	421									
3	10:55	11.7	8.0	40	78	210	408									
4	11:18	11.2	8.6	30	55	220	405									
5	11:30	10.7	8.4	30	52	220	386									
6	10:44	10.75	8.8	40	70.5	350	353									
7	11:59	11.4	8.5	40	75.4	195	365									
2-6	12:31	12.0	7.8	35	70	190	382									
2	12:52	11.25	8.8	35	66	190	352									
3	13:07	11.25	8.1	30	56	195	362									
4	13:27	11.0	8.3	25	45	210	380									

AVERAGES

BLR OUT	—	11.3	8.26		57		383									
MECH OUT	—	11.4	8.5		75		365									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

1590

KVB

GASEOUS EMISSIONS DATA

TEST SITE: C

TEST NO: 42

DATE: 6-9-78

FUEL: High Fusion

LOAD: 180 klb/hr.

CONDITIONS: Excess O_2 - 9.4% High O.A.

DATA TAKEN BY: J.T.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	10:20	9.0	10.6	65	98	190	286									
7	10:38	9.7	9.8	110	176	195	312									
2-6	10:55	9.5	10.1	100	157	180	283									
7	11:10	9.3	10.3	100	154	180	278									
2-6	11:25	9.5	10.6	100	157	185	290									
7	11:43	9.4	11.0	73	114	190	296									

AVERAGES

BLR OUT	—	9.35	10.6		132		289									
MECH	—	9.5	10.2		158		295									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 43

DATE 6-13-78

FUEL Eastern High Fusion

LOAD 140 KNS/hr.

CONDITIONS Excess O_2 - 9.8% - High O.F.A.

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	10:30	10.0	10.3	25	41	230	378									T_{dry} — 64
																T_{wet} — 53
7	10:50	9.6	10.6	25	40	225	356									RH — 47%
2-6	11:05	10.0	10.4	25	41	225	369									
2	11:25	11.25	9.0	35	65	220	408									
3	11:40	11.0	9.2	30	54	225	407									
4	11:45	10.75	9.4	20	35	225	397									
5	12:05	8.2	11.7	30	42	260	366									
6	12:20	7.5	12.4	30	40	260	347									
7	12:40	9.8	10.6	25	40	230	271									
2-6	—	9.2	10.9	25	38	210	321									

AVERAGES

BLROUT	—	9.8	10.4		45		374								
MECH	—	9.7	10.6		40		364								

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 44

DATE 6-15-78

FUEL Eastern High Fusion

LOAD 180 Klbs/hr.

CONDITIONS Excess O_2 - 9.0% - High O.F.A.

DATA TAKEN BY J. B

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	9:50	9.0	10.9	197	296	290	436									T_{dg} - 79
																T_{wet} - 64
7	10:25	8.8	10.9	170	251	280	414									RH - 45%
2,4-6	11:15	8.9	11.0	182	271	280	418									
4	12:20	9.6	10.4	190	302	240	381									
2	12:42	10.0	10.0	205	337	230	378									
5	13:10	7.95	11.9	167	231	263	364									
6	13:25	7.3	12.4	120	158	275	362									
7	13:45	8.8	11.2	160	237	280	414									
2-6	14:10	9.5	9.7	155	243	225	353									

AVERAGES

BLROUT	—	8.9	10.9		263		385									
MECH	—	8.8	11.1		244		414									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 45

DATE 6-17-78

FUEL WESTERN COAL

LOAD 180 Klbs/hr.

CONDITIONS 8.3% Excess O_2 — High O.F.A.

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2,4-6	19:30	8.4	11.0	182	261	280	401									T_{wet} - 74
																T_{dry} - 82
2,4-6	19:50	8.2	11.1	197	278	265	374									RH = 70%
7	20:15	8.35	10.8	190	271	275	329									
4	20:35	9.25	10.0	160	246	235	361	210	323	217	333	-7	-10			
2	21:20	9.9	9.3	280	456	260	423									
5	21:40	7.6	11.5	190	252	255	343									
6	22:00	6.9	12.5	122	156	270	345									
2,4-6	22:17	7.6	12.0	160	215	275	370							? 209	? 281	
7	23:00	8.5	11.4	180	260	280	411									
2,4-6	23:30	8.6	11.2	210	306	260	379							? 185	? 269	

AVERAGES

BURNT	—	8.3	11.1		272		375									
MECH	—	8.4	11.1		216		402									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 46

DATE 6-20-78

FUEL EASTERN LOW FUSION

LOAD 180 K lb/hr.

CONDITIONS 9.0 Excess O_2 High O.F.A.

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2, 4-6	14:20	9.2	10.0	30	46	295	451									T_{dry} = 79°F
																T_{wet} - 64°F
2, 4-6	14:50	9.0	10.2	30	45	295	444									RH — 45%
7	15:15	9.1	10.1	30	46	260	394									
6	15:35	7.3	11.7	30	39	300	395									
5	16:00	8.2	10.7	30	42	295	416									
4	16:30	9.7	9.7	36	58	277	443	260	416	270	432	-10	-16			
2	16:55	10.5	8.8	58	100	275	473									
2, 4-6	17:20	9.1	10.2	46	70	285	432									
7	17:50	9.1	10.2	42	64	280	425									
4	18:25	9.5	9.6	40	63	300	475	290	459	297	470	-7	-11			

AVERAGES

BURNT	—	9.0	10.2		57		436									
MECH	—	9.1	10.1		55		410									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 47

DATE 6-29-78

FUEL Eastern Low Fusion

LOAD 150 Kibs/hr.

CONDITIONS —

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	8:50	9.9	9.6	30	49	240	391									
6	9:00	8.6	10.6	25	36	275	400									
5	9:05	9.0	10.2	22	33	265	399									
4	9:10	10.3	9.2	20	34	245	414									
3	9:15	11.0	8.5	35	63	235	425									
2	9:20	10.3	9.0	27	46	255	431									
2-6	9:25	9.6	9.6	30	48	247	391									

AVERAGES

BURNT	—	9.8	9.5		44		407									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE 48 C

TEST NO 48

DATE 6-29-78

FUEL Eastern Low Fusion

LOAD 170 K lbs/hr.

CONDITIONS Vary O.F.A

DATA TAKEN BY MJ.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET) NOx		NO		NO_2		HC		REMARKS
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	14:00	9.5	9.9	25	39	255	400									25" OFA
2-6	14:25	9.3	10.0	22	34	263	406									15" OFA
2-6	14:45	8.3	10.8	45	64	268	381									5" OFA
2-6	15:00	9.35	10.1	20	31	250	387									15" OFA
2-6	15:25	9.8	9.4	19	31	245	395									25" OFA
2-6	15:45	8.3	10.9	40	57	265	376									5" OFA

AVERAGES

2-6	—	8.3	10.85		60.5		379									5" OFA
2-6	—	9.3	10.05		32.5		377									15" OFA
2-6	—	9.65	9.65		35		398									25" OFA

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 49

DATE 7-5-78

FUEL EASTERN LOW FUSION

LOAD 100 K lb/hr.

CONDITIONS

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	11:00	12.5	7.2	65	139	175	373									
7	11:25	11.75	7.3	50	98	190	372									
2-6	11:45	11.5	7.4	50	95	190	362									
2-6	11:55	10.5	8.6	30	52	195	336									
7	12:20	10.5	8.6	25	43	205	353									
2-6	12:35	9.0	9.8	20	30	205	308									
7	12:50	9.0	9.8	18	27	210	316									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE C

TEST NO 50

DATE 7-5-78

FUEL Eastern Low Fusion

LOAD 100 K lbs/hr.

CONDITIONS

DATA TAKEN BY MJ

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	14:30	10.9	8.8	40	72	200	358									
7	14:35	10.8	8.8	40	71	210	372									
2-6	14:55	8.9	10.3	45	67	190	283									
7	14:10	8.8	10.4	50	74	205	303									
2-6	14:30	7.2	11.6	92	120	165	216									
7	14:35	7.1	11.7	92	119	175	227									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

SOx DATA SUMMARY

Test No.	Load	O2 (%)	SO2 (unc ppm)	SO3 (unc ppm)	SOx (unc ppm)	SO2 (corr ppm)	SO3 (corr ppm)	SOx (corr ppm)	Test Description
44A	177.3 Klbs/hr.	8.9	668	5.5	673.5	996.4	8.2	1004.6	SOK BLR OUT
44B			674.5	4.0	678.5	1006.0	6.0	1012.0	
44C			606	5.1	611.1	904.0	7.6	911.6	
44 AVE.			650	4.9	654.9	968.8	7.3	976.1	
45A	177.7 Klbs/hr.	8.3	567	3.0	570.0	818	4.3	822.3	
45B			554	3.5	557.5	787	5.0	792.0	
45C			570	3.0	573.0	810.0	4.3	814.3	
45 AVE.			563.7	3.2	566.9	805	4.5	809.5	
46A	180.7 Klbs/hr.	9.1	1189.5	5.1	1194.6	1804.4	7.8	1812.2	
46B			1263.9	4.1	1268.0	1917.3	6.2	1923.5	
46C			1230.5	5.6	1236.1	1866.6	8.6	1875.2	
46 AVE.			1228.0	4.9	1232.9	1862.8	7.5	1870.3	

Local _____

SOx DATA SHEET

Date 6-15-78 Probe Location & Probe Length PORT # 2

Unit # 8 - Side C Fuel East High Fusion Load 180 K lbs/hr.

Test Description: TEST # 44

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Meter Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
44A	1	23:10	115	-0-	0.000	29.59	2	30	
		—	115		1.000				
44B	3	23:22	120		0.000			30	
		—	120		1.000				
44C	2	23:50	122		0.000			30	
		—	122		1.000				

SAMPLED BY RAP + AJ

	Test # 44A			Test # 44B			Test # 44C		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	.0107	→							
Dilution Factor F	20	1		20	1		20	1	
Spike Blank B		2.2							
		2.1							
		2.0							
Averages		2.1							
Ml. of Titrant A	6.5	3.2		6.8	2.9		5.9	3.1	
	6.9	—		6.7			5.9		
	6.7	—		6.5			6.1		
Averages	6.7	3.2		6.7			6.0		
460 + T	575			580			582		
Sample Vol. V	1.000	→							
P + p	29.59								
A - B	6.7	1.1		6.7	0.8		6.0	1.0	

TITRATED BY MJ

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(6.7)(20)(.0107)(575)24}{(1)(29.59)}$$

SO2 = $\boxed{668}$ SO3 = $\boxed{5.5}$

$$SO3 = \frac{(1.1)(1)(.0107)(575)24}{(1)(29.59)}$$

SO2 @ 3% O2 = 996.4
SO3 @ 3% O2 = 8.2
SOx @ 3% O2 = 1004.6

$$SO2 = \frac{(6.7)(20)(.0107)(580)24}{(\ )(\ )}$$

SO2 = $\boxed{674.5}$

$$SO3 = \frac{(.8)(1)(.0107)(580)24}{(1)(29.59)}$$

SO3 = $\boxed{4.0}$

SO2 @ 3% O2 = 1006.0
SO3 @ 3% O2 = 6.0
SOx @ 3% O2 = 1012.0

$$SO2 = \frac{(6.0)(20)(.0107)(582)24}{(1)(29.59)}$$

SO2 = $\boxed{606}$

$$SO3 = \frac{(1)(1)(.0107)(582)24}{(1)(29.59)}$$

SO3 = $\boxed{5.1}$

SO2 @ 3% O2 = 904.0
SO3 @ 3% O2 = 7.6
SOx @ 3% O2 = 911.6

RR304.Rev

Local _____

SOx DATA SHEET

Date 6-17-78 Probe Location & Probe Length Port #2 — 2.5'

Unit # 8 - Side C Fuel Western Coal Load 180 Klbs/hr.

Test Description: _____

Test No.	Box No.	Sample Time	Meter Temp. (T)	(p) Meter Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
45A	1	7:25	126	-0-	0.000	29.38	2	8:00	8.3
		7:40	—		1.000			8:30	
45B	3	8:05	126		0.000			8:30	
		8:15	—		1.000			9:00	
45C	2	8:30	126		0.000			9:00	
		8:45	—		1.000			9:30	

SAMPLED BY MJ

	Test #			Test #			Test #		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	.0107								
Dilution Factor F	20	1		20	1		20	1	
Spike Blank B	2.2								
	2.2								
Averages	2.2								
Ml. of Titrant A	5.6	2.8		5.5	2.9		5.7	2.8	
	5.6	—		5.5	—		5.6	—	
	5.7	—		5.5	—		5.7	—	
Averages	5.63	2.8		5.5	2.9		5.66	2.8	
460 + T	576			576					
Sample Vol. V	1.000 cf								
P + p	29.38								
A - B	5.63	.6		5.5	.7		5.66	.6	

TITRATED BY MJ

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(5.63)(.0107)(20)(576)24}{(1)(29.38)}$$

SO2 = 567 SO3 = 3.0

$$SO3 = \frac{(.6)(.0107)(1)(576)24}{(1)(29.38)}$$

SO2 @ 3% O2 = 818
SO3 @ 3% O2 = 4.26
SOx @ 3% O2 = 822.26

$$SO2 = \frac{(5.5)(.0107)(20)(576)24}{(1)(29.38)}$$

SO2 = 554

$$SO3 = \frac{(.7)(.0107)(1.00)(576)24}{(1)(29.38)}$$

SO3 = 3.5

SO2 @ 3% O2 = 787
SO3 @ 3% O2 = 5.0
SOx @ 3% O2 = 792.0

$$SO2 = \frac{(.6)(.0107)(1)(576)24}{(1)(29.38)}$$

SO2 = 570

$$SO3 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$$

SO3 = 3.0

SO2 @ 3% O2 = 810
SO3 @ 3% O2 = 4.26
SOx @ 3% O2 = 814.26

Local _____

SOx DATA SHEET

Date June 20, 1978 Probe Location & Probe Length _____

Unit # 8-Side C Fuel Low Fusion Eastern Load 180K

Test Description: _____

Test No.	Box No.	Sample Time	Meter Temp. (T)	(p) Meter Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
46A	1	3:10	128	-0-	0.000	29.45	2	3:30	9.1
		3:25			1.000			4:00	
46B	3	3:40			0.000			4:00	
		3:55			1.000			4:35	
46C	2	4:10			0.000			4:40	
		4:25			1.000			5:20	

SAMPLED BY MJ

		Test # A			Test # B			Test # C		
		SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality	N	.0107								
Dilution Factor	F	20	1		25	1		25	1	
Blank	B	-0-								
Averages										
Ml. of Titrant	A	11.5	1.0		9.7	.8		9.8	1.1	
		11.7	—		10.0	—		9.6	—	
		11.8	—		9.9	—		9.6	—	
Averages		11.6	1.0		9.86	.8		9.66	1.1	
460 + T		588								
Sample Vol.	V	1.000 ft³								
P + p		29.45								
A - B		11.6	1.0		9.86	.8		9.66	1.1	

TITRATED BY MJ

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(11.6)(20)(.0107)(588)24}{(1.0)(29.45)}$$

SO2 = 1109.5 SO3 = 5.13

$$SO3 = \frac{(1.0)(.0107)(588)(1)24}{(1.00)(29.45)}$$

SO2 @ 3% O2 = 1804.4
SO3 @ 3% O2 = 7.8
SOx @ 3% O2 = 1812.2

$$SO2 = \frac{(9.86)(25)(.0107)(588)24}{(1.00)(29.45)}$$

SO2 = 1263.9

$$SO3 = \frac{(.8)(.0107)(588)(1.0)24}{(1.00)(29.45)}$$

SO3 = 4.1

SO2 @ 3% O2 = 1917.3
SO3 @ 3% O2 = 6.2
SOx @ 3% O2 = 1923.5

$$SO2 = \frac{(9.66)(.0107)(25)(588)24}{(1.00)(29.45)}$$

SO2 = 1230.5

$$SO3 = \frac{(1.1)(.0107)(1.0)(588)24}{(1.0)(29.45)}$$

SO3 = 5.64

SO2 @ 3% O2 = 1866.6
SO3 @ 3% O2 = 8.55
SOx @ 3% O2 = 1875.15

SECTION 4.0

SPECIAL TEST DATA

		PAGE
4.1	OVERFIRE AIR DUCT DIMENSIONS & SAMPLE GEOMETRY	294
4.2	OVERFIRE AIR DUCT VELOCITY TRAVERSES	296
4.3	FLYASH REINJECTION MASS FLOW RATES	333
4.4	MODIFIED SMOKE SPOT DATA SHEET	335
4.5	PARTICLE SIZE DISTRIBUTION - BRINK	337
	- SASS	343
	- BAHCO	344

Preceding page blank

FRONT OVERFIRE AIR - MAIN PIPE 14 - 2.125 = 11.875 "DIA OF DUCT

% DIA	INCHES	% DIA" + PORT
.021	.250	2.37
.067	.795	2.92
.118	1.40	3.52
.177	2.10	4.22
.250	2.96	5.09
.355	4.21	6.34
.645	7.65	9.78
.750	8.90	11.00
.823	9.77	11.89
.882	10.47	12.59
.933	11.07	13.20
.979	11.62	13.75

FRONT OVERFIRE AIR - TOP - ID PORT 7.75 - 2.0 = 5.75

% DIA	INCHES	% DIA" + PORT
.021	.120	2.12
.067	.380	2.38
.118	.678	2.678
.177	1.01	3.01
.250	1.43	3.43
.355	2.04	4.04
.645	3.70	5.70
.750	4.31	6.31
.823	4.73	6.73
.882	5.07	7.07
.933	5.36	7.36
.979	5.62	7.62

BACK OVERFIRE AIR - MAIN PIPE ID PORT 11.875 - 2.125 = 9.75

% DIA	INCHES	% DIA" + PORT
.021	.200	2.329
.067	.653	2.77
.118	1.15	3.275
.177	1.72	3.85
.250	2.43	4.56
.355	3.46	5.58
.645	6.28	8.41
.750	7.31	9.43
.823	6.02	10.14
.882	8.60	10.72
.933	9.09	11.22
.979	9.54	11.67

BACK OVERFIRE AIR - TOP DUCT ID PORT 9.75 - 2 = 7.75

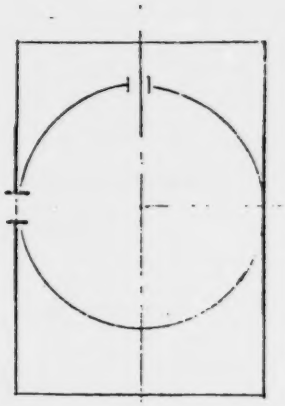
SAME MEASUREMENTS AS REINJECTION

REINJECTION - ID PORT 10.0 - 2.125 = 7.875 ID

% DIA	INCHES	% DIA" + PORT
.021	.165	2.29
.067	.527	2.65
.118	.929	3.05
.177	1.393	3.52
.250	1.968	4.09
.355	2.79	4.92
.645	5.07	7.20
.750	5.90	8.03
.823	6.48	8.60
.882	6.94	9.07
.933	7.34	9.47
.979	7.71	9.83

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. S.k C
DATE 4-18-78
SAMPLING LOCATION FRONT ov. Fire Air - Main Pipe
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_s _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

GR04

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST-A	EAST-B			
1.	.979	11.62	—	—	94°F		
2.	.933	11.07	—	—			
3.	.882	10.47	1.4	1.4			
4.	.823	9.77	1.5	1.5			
5.	.750	8.90	1.4	1.6			
6.	.645	7.65	1.6	1.7			
7.	.355	4.21	1.9	1.8			
8.	.250	2.96	2.1	1.8			
9.	.177	2.1	2.1	1.8			
10.	.118	1.4	1.8	1.8			
11.	.067	.795	—	—			
12.	.021	.25	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

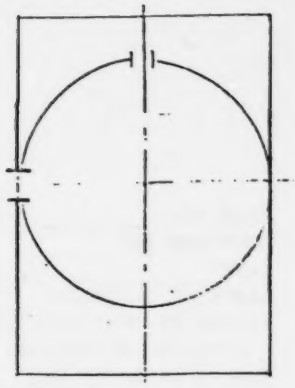
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \frac{407}{(P_s)}\ \frac{1.00}{(G_s)}}$

V_s = 88.69 ft/sec.

$\tilde{\Delta P}$ = 1.6929
T_s = 554°R
P_s = 30.04 "Hg
Mw = 29

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2.
LOCATION NO. Site C
DATE 4-18-78
SAMPLING LOCATION FRONT OVERFIRE AIR - MAIN PIPE
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_s _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

GRAY

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (ΔP_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			W - A	WEST - B			
1.	.979	11.62	—	—			
2.	.933	11.07	—	—	95°F		
3.	.882	10.47	1.3	.97			
4.	.823	9.77	1.3	1.1			
5.	.750	8.90	1.3	1.2			
6.	.645	7.65	1.3	1.3			
7.	.355	4.21	1.3	1.3			
8.	.250	2.96	1.3	1.3			
9.	.177	2.1	1.3	1.3			
10.	.118	1.4	1.2	1.2			
11.	.067	.795	—	—			
12.	.021	.25	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

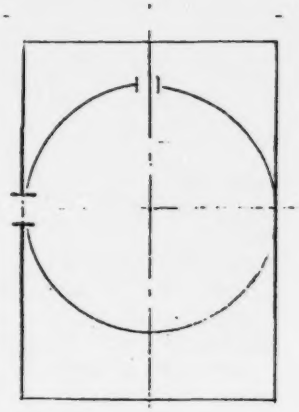
$\bar{\Delta P} = 1.2525$
$T_s = 555$
$P_s = 30.24$
$MW = 29.0$

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overline{\Delta P (T_s + 460)}^{\,\text{Average}} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$.

$V_s = 76.10$ ft/sec.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. Site C
DATE 4-18-78
SAMPLING LOCATION FRONT TOP OVER FIRE AIR
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

BLACK

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST - A	EAST - B			
1.	.979	5.62	—	—	94°F		
2.	.933	5.36	—	—			
3.	.882	5.07	—	—			
4.	.823	4.73	.12	.22			
5.	.750	4.31	.30	.11			
6.	.645	3.70	.25	.12			
7.	.355	2.04	.12	.12			
8.	.250	1.43	.13	.12			
9.	.177	1.01	.13	.12			
10.	.118	.678	—	—			
11.	.067	.38	—	—			
12.	.021	.120	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

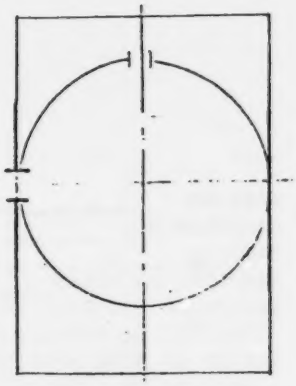
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

$\Delta P = 0.1500$
$T_s = 554$
$P_s = 30.11$
$MW = 29.0$

$V_s = 26.37$ ft/sec.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. S. & C
DATE 4-18-78
SAMPLING LOCATION FRONT - TOP OVER FIRE AIR DUCT
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_s
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

BLACK DUCT DIA. - 5.75" Area = 0.1803 ft^2

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			WEST-A	WEST-B			
1.	.979	5.62	—	—	95°F		
2.	.933	5.36	—	—			
3.	.882	5.07	—	—			
4.	.823	4.73	2.9	2.1			
5.	.750	4.31	2.9	2.3			
6.	.645	3.70	2.8	2.4			
7.	.355	2.04	2.6	2.5			
8.	.250	1.43	2.7	2.3			
9.	.177	1.01	2.7	2.2			
10.	.118	.678	—	—			
11.	.067	.38	—	—			
12.	.021	.120	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overline{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

$\overline{\Delta P}$ = 2.5265
T_s = 555
P_s = 30.11
MW = 29

Vs = 108.32 ft/sec.
Qs = 19.53 ft^3

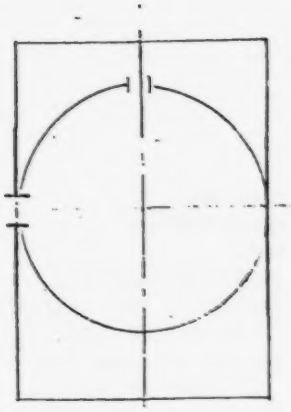


Table C-11.

SMOKESTACK FLOW PROFILE

TEST NO. 2
LOCATION NO. Side C
DATE 4-18-78
SAMPLING LOCATION BACK OVER-FIRE AIR MAIN PIPE
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

~~[illegible]~~ RED TAPE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST-A	EAST-B			
1.	.979	9.54	—	—			
2.	.933	9.09	—	—			
3.	.882	8.6	.35	.35			
4.	.823	8.02	.37	.42			
5.	.750	7.31	.39	.44			
6.	.645	6.28	.38	.44			
7.	.355	3.46	.42	.45			
8.	.250	2.43	.44	.45			
9.	.177	1.72	.44	.44			
10.	.118	1.15	.41	.41			
11.	.067	.653	—	—			
12.	.021	.20	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

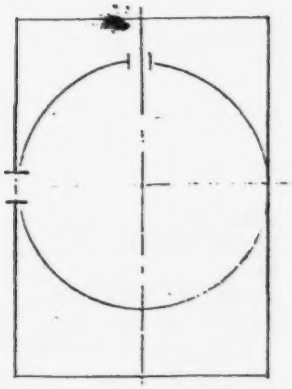
$$\text{STACK GAS SPEED, } V_s = 174\, F_s \sqrt{\overset{\text{Average}}{\Delta P}\,(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$$

$\tilde{\Delta P} = 0.4147$
$T_s = 554$
$P_s = 30.22$
$MW_s = 29$

$V_s = 43.77$ ft/sec.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. 5, & C
DATE 4-18-78
SAMPLING LOCATION BACK OV. FIRE AIR MAIN PIPE
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

~~BLACK~~ RED TAPE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			W-A	WEST B			
1.	.979	9.54	—	—	44°F		
2.	.933	9.09	—	—			
3.	.882	8.6	1.2	1.2			
4.	.823	8.02	1.2	1.2			
5.	.750	7.31	1.2	1.2			
6.	.645	6.28	1.2	1.2			
7.	.355	3.46	1.1	1.1			
8.	.250	2.43	1.1	1.1			
9.	.177	1.72	1.1	1.1			
10.	.118	1.15	1.1	1.0			
11.	.067	.653	—	—			
12.	.021	.20	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

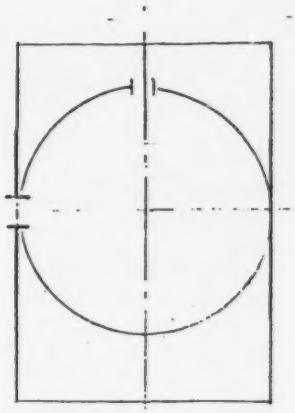
$$\text{STACK GAS SPEED, } V_s = 174\, F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$$

$\bar{\Delta P} = 1.1429$
$T_s = 5.54$
$P_s = 30.90$
$MW_s = 29.0$

$V_s = 71.86$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. Site C
DATE 4-18-78
SAMPLING LOCATION BACK TOP - OVER FIRE AIR
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

Green TAPE TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST-A	EAST-B			
1.	.979	7.71	—	—	94°F		
2.	.933	7.34	—	—			
3.	.882	6.94	—	—			
4.	.823	6.48	.22	.22			
5.	.750	5.90	.25	.20			
6.	.645	5.07	.24	.23			
7.	.355	2.79	.22	.25			
8.	.250	1.968	.24	.24			
9.	.177	1.393	.26	.14			
10.	.118	.929	—	—			
11.	.067	.527	—	—			
12.	.021	.165	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

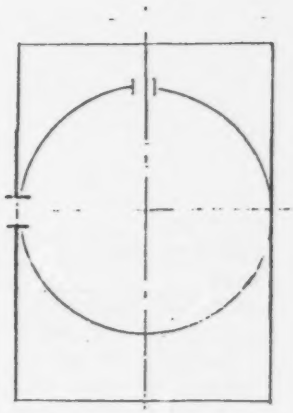
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

$\overline{\Delta P} = 0.2247$
$T_s = 554$
$P_s = 30.18$
$MW_s = 29$

$V_s = 32.23$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. Site C
DATE 4-18-78
SAMPLING LOCATION BACK TOP - OF. A.
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER (Green TAPE)	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			WEST A	WEST-B			
1.	.979	7.71	—	—	94		
2.	.933	7.34	—	—			
3.	.882	6.94	—	—			
4.	.823	6.48	.15	.89			
5.	.750	5.90	.16	.91			
6.	.645	5.07	.71	.94			
7.	.355	2.79	.84	.64			
8.	.250	1.968	.66	.99			
9.	.177	1.393	.29	.12			
10.	.118	.929	—	—			
11.	.067	.527	—	—			
12.	.021	.165	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

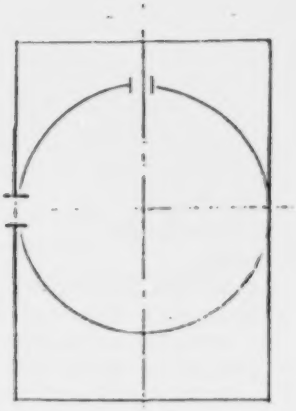
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

V_s = 50.43 ft/sec.

ΔP_s = 0.5501
T_s = 554
P_s = 30.19
Mw_s = 29.0

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. S. & C
DATE 4-18-78
SAMPLING LOCATION Reinjection port.
INSIDE OF FAR WALL TO _____
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO _____
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER (Green TAPE)	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (ΔP_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST-A	EAST-B			
1.	.979	7.71	—	—	94		
2.	.933	7.34	—	—			
3.	.882	6.94	—	—			
4.	.823	6.48	3.4	3.1			
5.	.750	5.90	3.3	3.3			
6.	.645	5.07	3.2	3.2			
7.	.355	2.79	3.2	3.2			
8.	.250	1.968	3.1	3.3			
9.	.177	1.393	3.1	3.3			
10.	.118	.929	—	—			
11.	.067	.527	—	—			
12.	.021	.165	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

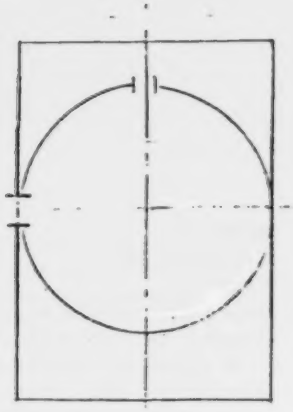
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$.

$\bar{\Delta P}_s = 3.2243$
$T_s = 554$
$P_s = 30.15$
$MW_s = 29$

$V_s = 122.19$ ft/sec.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 2
LOCATION NO. Site C
DATE 4-18-78
SAMPLING LOCATION Reinjection Pipe
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER (Green TAPE)	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			WEA	WEST-B			
1.	.979	7.71	—	—	94		
2.	.933	7.34	—	—			
3.	.882	6.94	—	—			
4.	.823	6.48	.61	.63			
5.	.750	5.90	.56	.65			
6.	.645	5.07	.65	.67			
7.	.355	2.79	.71	.64			
8.	.250	1.968	.70	.64			
9.	.177	1.393	.71	.63			
10.	.118	.929	—	—			
11.	.067	.527	—	—			
12.	.021	.165	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

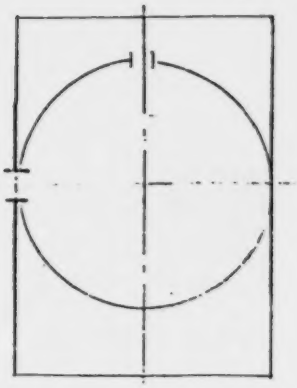
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$.

$V_s = 54.42$

$\overline{\Delta P_s} = 0.6493$
$T_s = 554$
$P_s = 30.61$
$MW_s = 29.0$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. Site C
DATE 4-19-78
SAMPLING LOCATION FRONT OVER FIRE AIR - MAIN PIPE - EAST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

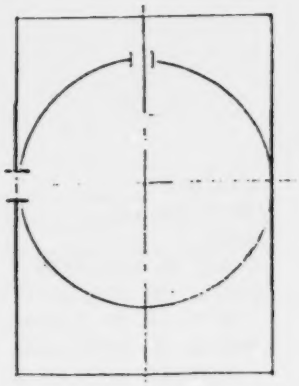
TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM PORT	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST-A	EAST-B			
1.	.979	13.75	—	—	96		
2.	.933	13.2	—	—			
3.	.882	12.59	2.3	2.3			
4.	.823	11.89	2.4	2.5			
5.	.750	11.0	2.4	2.6			
6.	.645	9.78	2.6	2.6			
7.	.355	6.34	3.1	2.9			
8.	.250	5.09	3.3	3.1			
9.	.177	4.22	3.2	3.1			
10.	.118	3.52	3.0	3.1			
11.	.067	2.92	—	—			
12.	.021	2.37	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

$\Delta P_s = 2.7708$
$T_s = 556$
$P_s = 30.89$
$MW_s = 29.0$
$V_s = 111.90$ ft/sec.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. S. & C
DATE 4-19-78
SAMPLING LOCATION FRONT OVER FIRE AIR MAINPIPE WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) BARAMETRIC PRESS, in.Hg
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) STACK PRESS., Ps, iwg
STACK I.D. (DISTANCE A - DISTANCE B) STK. GAS SP. GRAVITY, G_S
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

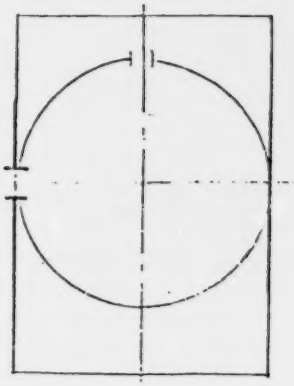
TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			WEST-A	WEST-B			
1.	.979	13.75	—	—	96		
2.	.933	13.2	—	—			
3.	.882	12.59	1.8	2.0			
4.	.823	11.89	1.7	2.0			
5.	.750	11.0	1.7	1.9			
6.	.645	9.78	1.8	1.9			
7.	.355	6.34	1.9	1.9			
8.	.250	5.09	2.1	1.9			
9.	.177	4.22	2.1	2.0			
10.	.118	3.52	2.1	2.0			
11.	.067	2.92	—	—			
12.	.021	2.37	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

WEST – $\bar{\Delta P}_s = 1.9229$
$T_s = 556$
$P_s = 30.64$
$MW_s = 29$
$V_s = 9360$ ft/sec.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. Site C
DATE 4-19-78
SAMPLING LOCATION FRONT TOR Q.F.A — EAST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

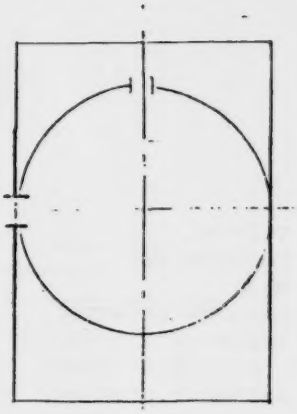
TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM Edge of PORT	VELOCITY HEAD (ΔP_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EAST A	EAST B			
1.	.979	7.62	—	—	96		
2.	.933	7.36	—	—			
3.	.882	7.07	—	—			
4.	.823	6.73	.59	.71			
5.	.750	6.31	.62	.67			
6.	.645	5.70	.46	.62			
7.	.355	4.04	.32	.49			
8.	.250	3.43	.35	.53			
9.	.177	3.01	.37	.51			
10.	.118	2.678	—	—			
11.	.067	2.38	—	—			
12.	.021	2.12	—	—			
13.							
14.							
15.							
16.							
17.							
18.							
Average							

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

AP_s = 0.5124
T_s = 556
P_s = 30.71
MW_s = 29
V_s = 48.35

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. S. & C
DATE 4-19-78
SAMPLING LOCATION FRONT TOP OVER FIRE AIR WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

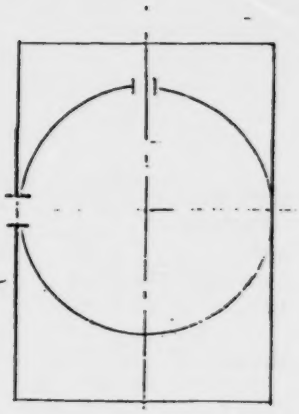
TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM Edge of PORT	VELOCITY HEAD (Δp_s), in. H_sO		STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			WEST-A	WEST-B			
1.	.979	7.62	—	—	96		
2.	.933	7.36	—	—			
3.	.882	7.07	—	—			
4.	.823	6.73	3.2	4.1			
5.	.750	6.31	3.2	3.8			
6.	.645	5.70	3.0	3.7			
7.	.355	4.04	3.5	3.6			
8.	.250	3.43	3.2	3.6			
9.	.177	3.01	3.1	3.7			
10.	.118	2.678	—	—			
11.	.067	2.38	—	—			
12.	.021	2.12	—	—	✓		
13.							
14.							
15.							
16.							
17.							
18.							
Average							

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

WEST $\overline{\Delta P_s}$ 3.46
T_s 556
P_s - 30.70
MW_s = 29
Vs = 125.79

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. Stk C
DATE 4-19-78
SAMPLING LOCATION BACK OVERFIRE AIR MAIN PIPE EAST & WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM Port Edge "	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			W-A	W-B	E-A	E-B			
1.	.979	11.67	—	—	—	—	96		
2.	.933	11.22	—	—	—	—			
3.	.882	10.72	1.5	1.6	.64	.77			
4.	.823	10.14	1.6	1.6	.76	.82			
5.	.750	9.43	1.6	1.6	.84	.82			
6.	.645	8.41	1.6	1.7	.87	.82			
7.	.355	5.58	1.6	1.7	.86	.89			
8.	.250	4.56	1.6	1.6	.91	.93			
9.	.177	3.85	1.4	1.7	.94	.84			
10.	.118	3.275	.91	1.6	.85	.79			
11.	.067	2.77	—	—	—	—			
12.	.021	2.329	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

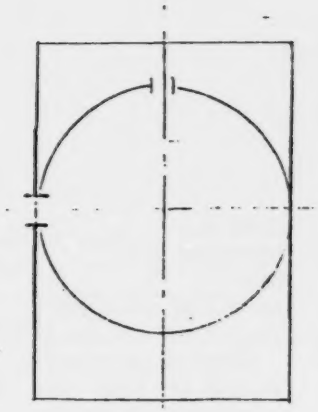
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

WEST
$\tilde{\Delta P_s} = 1.55$
$T_s = 556$
$P_s = 30.91$
$Mw_s = 29$
$V_s = 83.93$

EAST
$\tilde{\Delta P_s} = .83$
$T_s = 556$
$P_s = 30.83$
$Mw_s = 29$
$V_s = 61.51$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. Site C
DATE 4-19-78
SAMPLING LOCATION BACK TOP OF A EAST + WEST DUCTS
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_s _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM PORT EDGE "	VELOCITY HEAD (ΔP_s), in. H_2O				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			E-A	E-B	W-A	W-B			
1.	.979	9.83	—	—	—	—	96		
2.	.933	9.47	—	—	—	—			
3.	.882	9.07	—	—	—	—			
4.	.823	8.6	.53	.42	.62	1.1			
5.	.750	8.03	.59	.51	.61	1.1			
6.	.645	7.20	.59	.57	1.1	1.1			
7.	.355	4.92	.44	.51	.95	1.2			
8.	.250	4.09	.51	.45	.79	1.4			
9.	.177	3.52	.52	.47	.59	1.2			
10.	.118	3.05		—	—	—			
11.	.067	2.65							
12.	.021	2.29	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

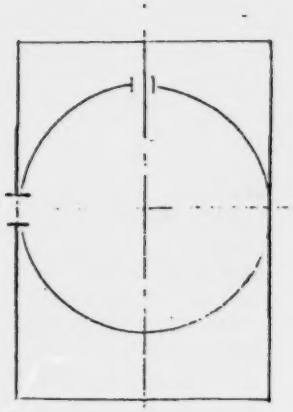
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$.

EAST
$\Delta P_s = 0.5085$
$T_s = 556$
$P_s = 30.88$
$MW_s = 29$
$V_s = 48.03$ ft/sec.

WEST
$\Delta P_s = .962$
$T_s = 556$
$P_s = 30.85$
$MW_s = 29$
$V_s = 117.08$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 3
LOCATION NO. 5.k c
DATE 4-19-78
SAMPLING LOCATION Reinjection Pipes EAST & WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM ~~Edge of Port~~ "	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			N-A	W-B	E-A	E-B			
1.	9.83	.979	—	—	—	—	96		
2.	9.47	.933	—	—	—	—			
3.	9.07	.882	—	—	—	—			
4.	8.6	.823	.72	.78	4.1	3.3			
5.	8.03	.750	.79	.79	4.0	4.0			
6.	7.20	.645	.82	.81	4.0	4.0			
7.	4.92	.355	.82	.85	4.0	4.0			
8.	4.09	.250	.83	.86	4.0	4.0			
9.	3.52	.177	.67	.76	3.7	4.0			
10.	3.05	.118	—	—	—	—			
11.	2.65	.067	—	—	—	—			
12.	2.29	.021	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

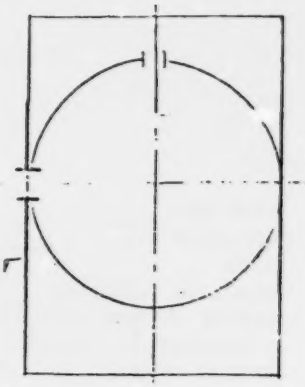
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

WEST
$\Delta P_s = 0.7908$
$T_s = 556$
$P_s = 30.40$
$Mw_s = 29$
$V_s = 60.37$

EAST
$\Delta P_s = 3.922$
$T_s = 556$
$P_s = 31.07$
$Mw_s = 29$
$V_s = 132.48$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 4
LOCATION NO. Site C
DATE 4-19-78
SAMPLING LOCATION FRONT OVERFIRE AIR MAIN PIPE EAST + WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			E-A	E-B	W-A	W-B			
1.	.979	13.75	—	—	—	—	96		
2.	.933	13.2	—	—	—	—			
3.	.882	12.59	.33	.40	.33	.34			
4.	.823	11.89	.37	.45	.37	.37			
5.	.750	11.0	.39	.46	.38	.41			
6.	.645	9.78	.40	.45	.42	.41			
7.	.355	6.34	.48	.46	.43	.42			
8.	.250	5.09	.52	.45	.41	.42			
9.	.177	4.22	.51	.44	.41	.42			
10.	.118	3.52	.50	.41	.33	.40			
11.	.067	2.92	—	—	—	—			
12.	.021	2.37	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

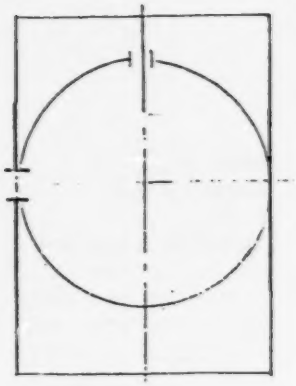
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overline{\Delta P (T_s + 460)}^{\,\text{Average}} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

EAST
$\Delta P = 0.437$
$T_s = 556$
$P_s = 29.38$
$Mw_s = 29$
$V_s = 45.66$

WEST
$\Delta P = 0.394$
$T_s = 556$
$P_s = 29.46$
$Mw_s = 29$
$V_s = 43.33$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 4
LOCATION NO. Side C
DATE 4-19-78
SAMPLING LOCATION Front top overfire Air EAST & WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			W-A	W-B	E-A	E-B			
1.	.979	7.62	—	—	—	—	96		
2.	.933	7.36	—	—	—	—			
3.	.882	7.07	—	—	—	—			
4.	.823	6.73	1.1	.82	0	.03			
5.	.750	6.31	.98	.87	.03	.02			
6.	.645	5.70	.91	.83	.05	.03			
7.	.355	4.04	.76	.84	.02	.03			
8.	.250	3.43	.82	.82	.02	.02			
9.	.177	3.01	.84	.79	.02	.02			
10.	.118	2.678	—	—	—	—			
11.	.067	2.38	—	—	—	—			
12.	.021	2.12	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

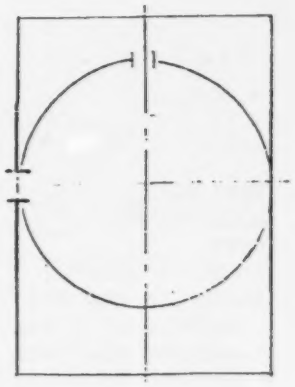
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

WEST
$\Delta P = .8628$
$T_s = 556$
$P_s = 29.43$
$MW_s = 29$
$V_s = 64.09$

EAST
$\Delta P_s = .0216$
$T_s = 556$
$P_s = 29.42$
$MW_s = 29.$
$V_s = 10.15$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 4
LOCATION NO. Sik C
DATE 4-19.78
SAMPLING LOCATION BACK OVERFIRE AIR EAST + WEST MAIN
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			E-A	E-B	W-A	W-B			
1.	.979	—	—	—	—	—	96		
2.	.933	—	—	—	—	—			
3.	.882	10.72	.04	.06	.42	.41			
4.	.823	10.14	.05	.07	.45	.44			
5.	.750	9.43	.07	.07	.45	.44			
6.	.645	8.41	.07	.08	.46	.43			
7.	.355	5.58	.08	.08	.45	.44			
8.	.250	4.56	.08	.08	.46	.41			
9.	.177	3.85	.08	.08	.45	.41			
10.	.118	3.275	.08	.08	.42	.39			
11.	.067	—	—	—	—	—			
12.	.021	—	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

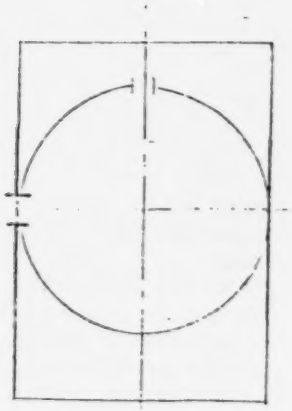
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

EAST $\Delta P = .0713$
$T_s = 556$
$P_s = 29.46$
$MW_s = 29$
$V_s = 18.41$

WEST
$\Delta P_s = 0.4324$
$T_s = 556$
$P_s = 29.47$
$MW_s = 29$
$V_s = 45.36$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 4
LOCATION NO. Site C
DATE 4-19-78
SAMPLING LOCATION BACK TOP OF A. EAST + WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_s _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			E-A	E-B	W-A	W-B			
1.	.979	—	—	—	—	—	96		
2.	.933	—	—	—	—	—			
3.	.882	—	—		—	—			
4.	.823	8.6	.01	.01	.01	.37			
5.	.750	8.03	.02	.02	.28	.39			
6.	.645	7.2	.03	.03	.39	.39			
7.	.355	4.92	.02	.03	.38	.37			
8.	.250	4.09	.02	.02	.05	.47			
9.	.177	3.52	.03	.02	.18	.47			
10.	.118	—	—	—	—	—			
11.	.067	—	—	—	—	—			
12.	.021	—	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

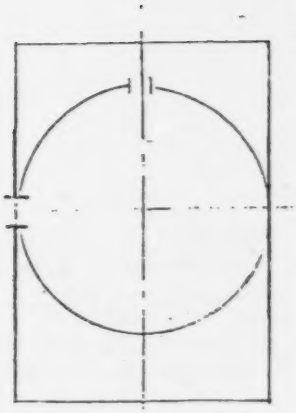
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

EAST
$\Delta P_s = .0203$
$T_s = 556$
$P_s = 29.45$
$M_{w_s} = 29$
$V_s = 9.83$

WEST
$\Delta P_s = .2804$
$T_s = 556$
$P_s = 29.44$
$M_{w_s} = 29.$
$V_s = 36.53$

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 4
LOCATION NO. side C
DATE 4-19-78
SAMPLING LOCATION Reinjection pipes EAST + WEST
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg _____
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_s _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			W-A	W-B	E-A	E-B			
1.	.979	—	—	—	—	—	96		
2.	.933	—	—	—	—	—			
3.	.882	—	—	—	—	—			
4.	.823	8.6	.55	.57	7.5	9.2			
5.	.750	8.03	.61	.57	9.7	9.6			
6.	.645	7.20	.63	.61	9.3	9.7			
7.	.355	4.92	.64	.59	9.6	9.6			
8.	.250	4.09	.62	.51	9.1	9.7			
9.	.177	3.52	.62	.57	9.4	9.2			
10.	.118	—	—	—					
11.	.067	—	—	—	—	—			
12.	.021	—	—	—	—	—			
13.									
14.									
15.									
16.									
17.									
18.									
Average									

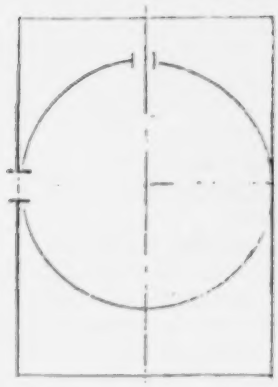
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$

WEST ΔP_s = .5850
T_s = 556
P_s = 29.76
M_{w_s} = 29
Vs = 52.48

EAST ΔP_s = .9290
T_s = 556
P_s = 29.67
M_{w_s} = 29
Vs = 66.23

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 37
LOCATION NO. S.1. C
DATE 6-1-73
SAMPLING LOCATION front [illegible] of A
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.49
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			E A	E B	W A	W B			
1.	.979	13.75					98		
2.	.933	13.2							
3.	.882	12.59	1.2	.80	2.1	2.0			
4.	.823	11.89	1.3	1.3	2.1	2.05			
5.	.750	11.00	1.35	1.5	2.1	2.1			
6.	.645	9.78	1.4	1.5	2.15	2.1			
7.	.355	6.34	1.45	1.6	2.15	2.1			
8.	.250	5.09	1.7	1.6	2.1	2.15			
9.	.177	4.22	1.8	1.6	2.1	2.15			
10.	.118	3.52	1.8	1.6	2.0	2.15			
11.	.067	2.92							
12.	.021	2.37							
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\, F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

W 13.5 E 12.5

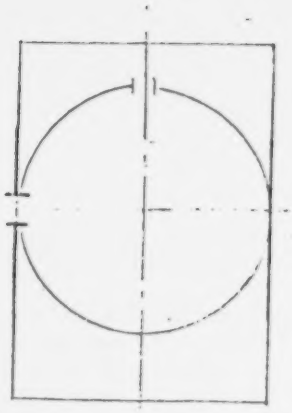
West: ΔP = 2.0997; T_s = 55[illegible]; P_s = 30.48; mws = 29; V_s = 98.41

East: ΔP = 1.4574; T_s = 55[illegible]; P_s = 30.41; mws = 29; V_s = 82.[illegible]

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 37
LOCATION NO. [illegible]
DATE 6-1-78
SAMPLING LOCATION [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.47
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg
STACK I.D. (DISTANCE A - DISTANCE B) ____ STK. GAS SP. GRAVITY, G_s
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (ΔP_s), in. H_sO	STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
1.	[illegible]	[illegible]	[illegible]	[illegible]		
2.	[illegible]	[illegible]				
3.	[illegible]	[illegible]				
4.	[illegible]	[illegible]	[illegible]			
5.	[illegible]	[illegible]	[illegible]			
6.	[illegible]	[illegible]	[illegible]			
7.	[illegible]	[illegible]	[illegible]			
8.	[illegible]	[illegible]	[illegible]			
9.	[illegible]	[illegible]	[illegible]			
10.	[illegible]	[illegible]				
11.	[illegible]	[illegible]				
12.	[illegible]	[illegible]				
13.						
14.						
15.						
16.						
17.						
18.						
Average						

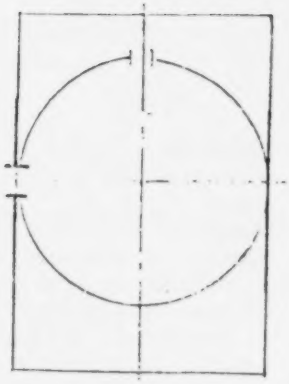
$$\text{STACK GAS SPEED, } V_s = 174\, F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$$

[illegible]

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. [illegible]
LOCATION NO. [illegible]
DATE [illegible]
SAMPLING LOCATION [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg [illegible]
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO	STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA EB WA WB			
1.	.979			98		
2.	.973					
3.	.922	10.72	.40 .51 .97 .99			
4.	.823	10.14	.52 .53 1.0 1.0			
5.	.750	9.43	.45 .53 1.0 1.0			
6.	.645	8.41	.56 .54 .98 1.0			
7.	.355	5.58	.51 .55 1.0 .97			
8.	.250	4.56	.53 .55 .99 1.0			
9.	.177	3.85	.53 .55 .98 1.0			
10.	.118	3.27	.52 .515 .85 .75			
11.	.067					
12.	.021					
13.						
14.						
15.						
16.						
17.						
18.						
Average						

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P(T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

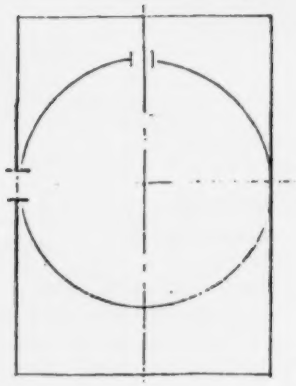
[illegible]
ΔP = 0.5[illegible]
T_s = 558
P_s = 3[illegible]
mw = 29
V_s = 4[illegible].94

[illegible]
ΔP = .0[illegible]
T_s = 55[illegible]
P_s = 30.5[illegible]
mw = 29
V_s = 66.6[illegible]

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 37
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION Back Top WA 15"
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 27.19
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_2O				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			LA	EB	WA	WB			
1.	.977						98		
2.	.973								
3.	.8[illegible]								
4.	.827	8.6	.25	.21	.40	.80			
5.	.750	8.03	.26	.25	.76	.82			
6.	.645	7.2	.25	.23	.70	.77			
7.	.355	4.92	.26	.26	.70	.79			
8.	.250	4.09	.26	.23	.73	.85			
9.	.177	3.52	.27	.19	.63	.97			
10.	.119								
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \frac{407}{(P_s)}\ \frac{1.00}{(G_s)}}$.

East/ ΔP = 0.2450, T_s = 958, P_s = 30.43, mws = 29, Vs = 33.62

West/ ΔP = 0.6982, T_s = 558, P_s = 30.44, mws = 29, Vs = 56.75

E 13.5 W 13.5

Reproduced from best available copy.

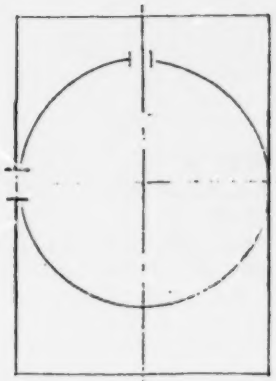


Table C-11.

SMOKESTACK FLOW PROFILE

TEST NO. 37
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION Reinject
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.47
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
1.	.979	-	WA	WB	EA	EB	92		
2.	.933	-							
3.	.882	-							
4.	.823	8.60	1.3	1.4	2.5	2.4			
5.	.750	8.03	1.3	1.3	2.6	2.5			
6.	.645	7.20	1.35	1.3	2.55	2.5			
7.	.355	4.92	1.4	1.4	2.5	2.5			
8.	.250	4.09	1.45	1.5	2.5	2.5			
9.	.177	3.52	1.4	1.45	2.4	2.5			
10.	.119	-							
11.	.067	-							
12.	.021	-							
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

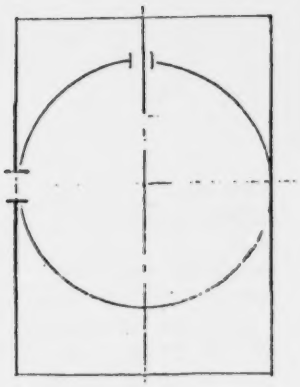
Static W-190 E-150

West
ΔP = 2.4756
TS = 558
PS = 30.59
mWs = 29
Vs = 107.10

East
ΔP = 1.3784
TS = 558
Ps = 30.89
mws = 29
Vs = 79.21

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 38
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION front main [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.49
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg 29.49
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

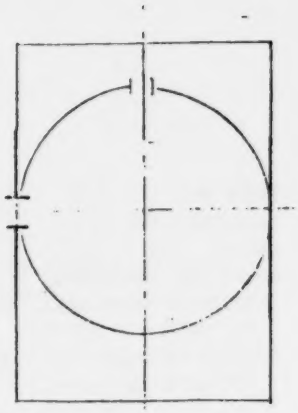
TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	979						78		
2.	933						↓		
3.	.282	12.59	2.1	2.1	2.9	3.1			
4.	.823	11.89	2.2	2.3	2.9	3.1			
5.	.750	11.[illegible]	2.2	2.3	3.1	3.1			
6.	.6[illegible]5	9.78	2.2	2.2	3.1	3.2			
7.	.355	6.71	2.5	2.6	3.2	3.2			
8.	.250	5.19	2.8	2.7	3.[illegible]	3.2			
9.	.177	4.22	2.8	2.8	3.1	3.1			
10.	.118	3.52	2.7	2.7	3.0	3.1			
11.	.067								
12.	[illegible]								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

$$\text{STACK GAS SPEED, } V_s = 174\, F_s \sqrt{\overset{\text{Average}}{\Delta P}\,(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$$

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 28
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION Stack Top 2'-8 23.5
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 27.42
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.977						78		
2.	.973						↓		
3.	.882								
4.	.823	6.73	.55	.73	.61	.12			
5.	.750	6.31	.65	.77	.47	.10			
6.	.645	5.27	.39	.68	.38	.31			
7.	.355	4.04	.47	.31	.51	.34			
8.	.250	3.43	.52	.41	.58	.38			
9.	.127	2.[illegible]	.65	.41	.61	.41			
10.	.118								
11.	.067								
12.	.061								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$

East: ΔP 0.5304, T_s 554, P_s = 30.35, mw = 27, V_s = 49.16

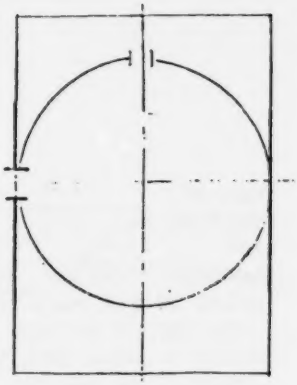
West: ΔP = 0.5701, T_s = 553, P_s = 30.87, mw = 27, V_s = 51.85

E 18.5 W 19.0

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 38
LOCATION NO. Site C
DATE 6 1 78
SAMPLING LOCATION Back main 27.5' 38A
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.49
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						98		
2.	.933								
3.	.882	10.72	.93	1.0	1.3	1.4			
4.	.823	10.14	1.1	1.0	1.4	1.4			
5.	.750	9.43	1.2	1.1	1.4	1.3			
6.	.645	8.41	1.2	1.0	1.4	1.4			
7.	.350	5.53	1.1	1.1	1.5	1.4			
8.	.250	4.56	1.1	1.1	1.45	1.4			
9.	.177	3.85	1.1	1.2	1.4	1.5			
10.	.119	3.275	1.2	1.2	1.4	1.3			
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$.

e-215 w-21

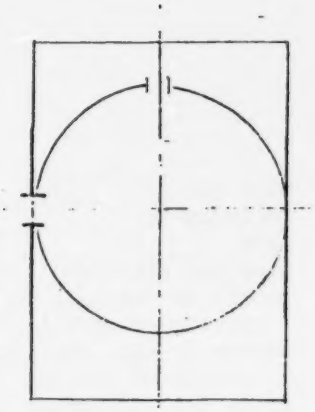
Cont/ ΔP 1.1003 Ts 558 Ps 31.07 Mw 27 Vs 79.56

Wet/ ΔP 1.7963 Ts 558 Ps 71.43 Mw 27 Vs 79.54

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 38
LOCATION NO. Site C
DATE 6-1-93
SAMPLING LOCATION Back Top OSA 23.5"
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.49
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., P_s, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_s _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						98		
2.	.933								
3.	.886								
4.	.823	8.6	.56	.61	.56	.72			
5.	.750	8.03	.55	.64	.32	.77			
6.	.645	7.2	.55	.66	.66	.76			
7.	.355	4.92	.54	.46	.79	.81			
8.	.250	4.09	.54	.42	.76	1.1			
9.	.177	3.52	.54	.36	.42	1.1			
10.	.118								
11.	.047								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$.

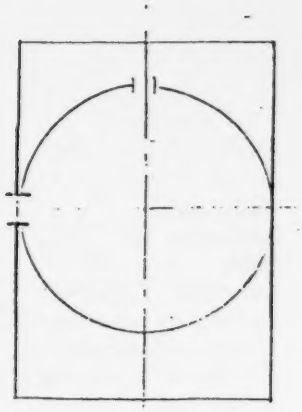
E 20.5 W-20

East
ΔP = 0.5324
T_s = 558
P_s = 31.0
mws = 29
V_s = 49.14

West
ΔP = 0.7127
T_s = 558
P_s = 33.96
mws = 29
V_s = 56.39

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 38
LOCATION NO. [illegible]
DATE 6-1-78
SAMPLING LOCATION [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg [illegible]
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			[illegible]	[illegible]	[illegible]	[illegible]			
1.	.977						[illegible]		
2.	.973								
3.	.882								
4.	.823	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
5.	.750	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
6.	.645	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
7.	.355	4.72	[illegible]	[illegible]	[illegible]	[illegible]			
8.	.250	4.[illegible]9	[illegible]	[illegible]	[illegible]	[illegible]			
9.	.177	3.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
10.	.118								
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

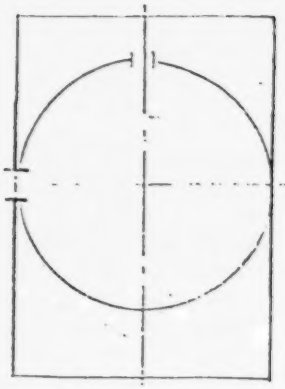
STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

[illegible]

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 39
LOCATION NO. [illegible]
DATE [illegible]
SAMPLING LOCATION [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg [illegible]
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						98		
2.	.933								
3.	.882	12.54	.32	.33	.64	.56			
4.	.823	11.89	.345	.37	.67	.57			
5.	.750	11.00	.36	.41	.67	.63			
6.	.645	9.78	.38	.42	.70	.66			
7.	.355	6.34	.45	.43	.73	.71			
8.	.250	5.09	.49	.43	.74	.75			
9.	.177	4.62	.49	.445	.71	.75			
10.	.118	3.52	.48	.43	.64	.74			
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

E-S W-S

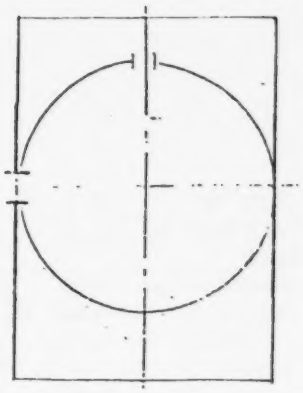
East/
$\bar{\Delta}P$ = 0.4095
T_s = 558
P_s = 29.34
mw_s = 29
V_s = 43.92

West/
$\bar{\Delta}P$ = 0.6791
T_s = 558
P_s = 29.34
mw_s = 29
V_s = 56.52

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 39
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION Front Top OFA 5"
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.47
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						98		
2.	.933						↓		
3.	.882								
4.	.823	6.73	.09	.14	.18	.25			
5.	.750	6.31	.08	.13	.16	.25			
6.	.645	5.70	.09	.13	.14	.24			
7.	.355	4.04	.07	.08	.11	.19			
8.	.250	3.43	.1	.075	.11	[illegible]			
9.	.177	3.01	.1	.08	[illegible]	.11			
10.	.118								
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P (T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

E-4 W-1

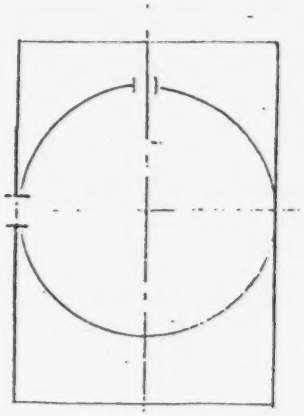
East/
$\tilde{\Delta P}$ = 0.0958
T_s = 558
P_s = 29.76
mw_s = 29
V_s = 21.27

West/
$\tilde{\Delta P}$ = 0.1576
T_s = 558
P_s = 29.76
mw_s = 29
V_s = 27.29

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 39
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION Back main OSA 5"
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.97
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (Δp_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						98		
2.	.973						↓		
3.	.882	10.72	.09	.09	.41	.40			
4.	.823	10.14	.11	.10	.43	.43			
5.	.750	9.43	.11	.11	.43	.43			
6.	.645	8.41	.115	.11	.44	.44			
7.	.355	5.58	.12	.115	.44	.43			
8.	.250	4.56	.12	.11	.44	.42			
9.	.177	3.85	.11	.11	.41	.43			
10.	.118	3.275	.11	.11	.32	.37			
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\left(\frac{407}{P_s}\right)\left(\frac{1.00}{G_s}\right)}$.

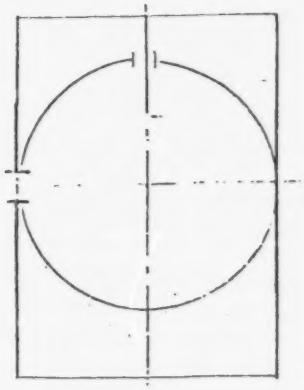
E - 5.0 W - 5.5

East
$\bar{\Delta P}$ = 0.1086
T_s = 553
P_s = 29.84
mw_s = 29
V_s = 22.62

West
$\bar{\Delta P}$ = 0.4163
T_s = 551
P_s = 29.97
mw_s = 29
V_s = 44.26

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 39
LOCATION NO. Site C
DATE 6-1-78
SAMPLING LOCATION Back Top of A 5"
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) _____ BARAMETRIC PRESS, in.Hg 29.97
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) _____ STACK PRESS., Ps, iwg _____
STACK I.D. (DISTANCE A - DISTANCE B) _____ STK. GAS SP. GRAVITY, G_S _____
NEAREST UPSTREAM DISTURBANCE _____
NEAREST DOWNSTREAM DISTURBANCE _____

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (ΔP_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						98		
2.	.933								
3.	.882								
4.	.823	8.6	.02	.025	.16	.34			
5.	.750	8.03	.02	.03	.19	.37			
6.	.645	7.2	.025	.03	.33	.35			
7.	.355	4.42	.02	.035	.34	.40			
8.	.250	4.09	.025	.03	.36	.45			
9.	.177	3.52	.025	.02	.26	.47			
10.	.118								
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P(T_s + 460)} \left(\frac{407}{P_s}\right) \left(\frac{1.00}{G_s}\right)}$

E-S W-S

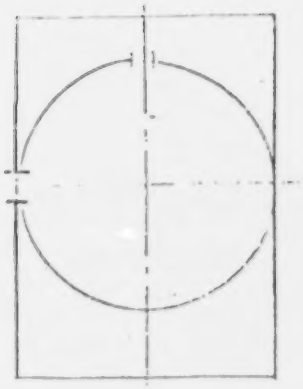
East/
$\tilde{\Delta P}$ = 0.0252
T_s = 558
P_s = 29.97
mw_r = 29
V_s = [illegible]

West/
$\tilde{\Delta P}$ = [illegible]
T_s = 558
P_s = 29.97
mw_s = 29
V_s = 39.16

Reproduced from best available copy.

Table C-11.

SMOKESTACK FLOW PROFILE



TEST NO. 39
LOCATION NO. [illegible]
DATE [illegible]
SAMPLING LOCATION [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) BARAMETRIC PRESS, in.Hg [illegible]
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) STACK PRESS., Ps, iwg
STACK I.D. (DISTANCE A - DISTANCE B) STK. GAS SP. GRAVITY, G_s
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE

TRAVERSE POINT NUMBER	% OF STACK DIAMETER	DISTANCE FROM INSIDE WALL	VELOCITY HEAD (ΔP_s), in. H_sO				STACK TEMPERATURE (T_s, °F	OXYGEN %	STACK GAS SPEED, Vs ft/min
			EA	EB	WA	WB			
1.	.979						[illegible]		
2.	.923								
3.	.882								
4.	.823	[illegible]							
5.	.750	[illegible]							
6.	.645	[illegible]							
7.	.355	[illegible]							
8.	.250	[illegible]							
9.	.177	[illegible]							
10.	.118								
11.	.067								
12.	.021								
13.									
14.									
15.									
16.									
17.									
18.									
Average									

STACK GAS SPEED, $V_s = 174\ F_s \sqrt{\overset{\text{Average}}{\Delta P}(T_s + 460)\ \left(\frac{407}{P_s}\right)\ \left(\frac{1.00}{G_s}\right)}$.

E-[illegible] W-[illegible]

East
$\overline{\Delta P}$ = [illegible]
T_s = [illegible]
P_s = [illegible]
mw_s = [illegible]
V_s = [illegible]

West
$\overline{\Delta P}$ = [illegible]
T_s = [illegible]
P_s = [illegible]
mw_s = [illegible]
V_s = [illegible]

Reproduced from best available copy.

E ↔ W

TEST 10, SITE C

Boiler Downspout No.	7	6	5	4	3	2	1	
Drum #	1	2	3	4	5	6	7	
Time In	8:56	8:56	8:56	8:57	8:57	8:57	8:58	
Time Out	10:30	10:30	10:31	10:32	10:33	10:35	10:34	
Δ Time (hrs)	1.567	1.567	1.583	1.583	1.600	1.633	1.600	
Gross Wt	81.5	111.5	107.0	78.5	79.5	94.5	145.0	
Tare Wt	31.0	38.5	32.0	38.0	38.0	32.0	31.5	
Net Wt (lb)	50.5	73.0	75.0	40.5	41.5	62.5	113.5	
Net lb/hr	32.2	46.6	47.4	25.6	25.9	38.3	70.9	Total 286.9 lb/hr Flyash
Drum Diameter (in)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Depth of Flyash (in)	13.0	19.5	19.25	10.5	15.0	16.5	30.5	
Volume Flyash (ft^3)	2.99	4.49	4.43	2.42	3.45	3.80	7.02	
Bulk Density (lb/ft^3)	16.88	16.27	16.93	16.76	12.02	16.46	16.17	(Avg 16.58)
								Total 435.3 lb/hr

Drum #	8	9	10	11	12	13	14A	14B	
Time In	10:30	10:30	10:31	10:32	10:33	10:35	10:34	11:46	
Time Out	12:02	12:04	12:04	12:05	12:04	12:04	11:46	12:03	
Δ Time (hrs)	1.533	1.567	1.550	1.550	1.517	1.483	1.200	0.283	
Gross Wt	124.0	118.5	122.0	95.5	100.0	132.0	137.5 →	76.5 ←	1.483
Tare Wt	32.5	33.5	30.5	31.5	30.5	29.0	28.0	29.0	
Net Wt (lb)	91.5	85.0	91.5	64.0	69.5	103.0	109.5	47.5	
Net lb/hr	59.7	54.3	59.0	41.3	45.8	69.4	105.8		Total 435.3 lb/hr
Drum Diameter (in)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	
Depth of Flyash (in)	25.0	23.0	24.5	15.5	17.5	26.0	31.0	12.0	
Volume Flyash (ft^3)	5.75	5.29	5.64	3.57	4.03	5.98	9.89		
Bulk Density (lb/ft^3)	15.91	16.06	16.23	17.94	17.26	17.22	15.87		
Sweepings <10 lb									

Average Bulk Density - 16.6 lb/ft^3

BOILER OUT FLYASH FLOW RATE TEST #36

Barrel	Time In	Out	Tare	Final	Δ Time Hrs	Δ Wt. lbs
1	1:50	5:12	31.0	156	3.37	125
2	1:52	5:13	38.5	181	3.35	142.5
3	1:53	5:14	32.0	191.5	3.35	159.5
4	1:54	5:15	38.0	85.0	3.37	47
5	1:56	5:16	38.0	151.0	3.33	113
6	1:57	3:57	32.0	169.5	2.00	137.5
7	1:58	3:57	31.5	176.0	1.98	144.6
(#6) 13	3:57	5:17	29.0	129.0	1.33	100
(#7) 14	3:57	5:18	29.0 lbs	148.0	1.38	119
					AVE 3.347	1088 final

Reinjection Downcommer	Rate lbs/hr
#1	37.1
2	42.5
3	47.6
4	14.0
5	33.9
6	71.3
7	79.1

TOTAL 1088 lbs/3.35 hrs = 325.1

KVB

SMOKE SPOT DATA SHEET

TEST SITE C MECH OUTLET

TEST NO.	NO. PUMPS	READING	PARTICULATES lb/10^6BTU	COMBUSTIBLES %	COMBUSTIBLES lb/10^6BTU
23	1	2	1.038	7.5	0.07785
23	2	3,3			
23	3	4			
24	1	2,2	1.025	6.2	0.06355
24	2	3,3			
24	3	4,4			
25	1	2,3	1.038	8.5	0.04635
	2	3,3			
	3	4,4			
26	1	2,2	1.038	6.3	0.065394
	2	3,3			
	3	4,4			
27	1	3,3	1.028	7.3	0.075044
	2	5,5			
	3	6,6			
28	1	2,2	0.938	6.3	0.059094
	2	3			
	3	3,4			
29	1	2	0.738	3.6	0.026568
	2	3,3			
	3	4,4			

15900

KVB

SMOKE SPOT DATA SHEET

TEST SITE C

TEST NO.	NO. PUMPS	READING	PARTICULATES lb/10^6BTU	COMBUSTIBLES %	COMBUSTIBLES lb/10^6BTU
40	1	1.5, 1.5	0.466	12.4	0.057784
	2	2.5, 3			
	3	3, 3.5			
41	1	2-2.5	0.538	26.7	0.143646
	2	3-3.5			
	3	4-4			
42	1	2-2	1.072	18.2	0.195104
	2	3-3			
	3	4, 4½			
43	1	2, 2	0.685	24.0	0.1644
	2	4, 4			
	3	5, 5			
35	1	.5, 1	0.356	—	
	2	1.5, 1.5			
	3	1.5, 2			
36	1	2, 2	0.519	13.7	0.0711
	2	3, 3			
	3	4, 4			

15900

KVB

BRINK CASCADE IMPACTOR DATA REDUCTION

TEST NO. 36 LOAD 78 %

TEST SITE C % O_2 8.1

TEST DATE 6-1-78 FUEL Western Coal

SAMPLE LOCATION Multiclone Outlet SPECIAL CONDITIONS No Flyash Reinjection

---

ρp - Density of particles 2.5 g/cm^3

μ - Viscosity of flue gas 2.45×10^{-4} poise

MWs - Molecular wt. flue gas 28.81 g/g mole

ΔP_I - Pressure drop across impactor 16.8 in H_2O

Ps - Absolute stack pressure 29.51 in. Hg

Ts - Absolute stack temperature 860 °R

Qs - Actual flow rate at stack conditions .0674 ft^3/min

Vm - Dry gas volume 2.0 SCF

Mn - Total particulate mass 7.7 mgm

Cn - Total concentration (0.076) grains/SCF (0.227)

I - Percent isokinetics 106 %

Vs - Gas velocity 36.68 ft/sec.

Dn - Nozzle diameter .075 in.

Stage Number	CYCLONE	1	2	3	4	5	FINAL FILTER
Dj - Jet Diameter, cm		0.2490	0.1775	0.1396	0.0946	0.0731	
Fj - Press. factor, n.d.		0.0210	0.0273	0.0395	0.0903	0.3277	
$D_{S,50}$ Stokes diameter, µm		2.95	1.71	1.14	0.56	0.33	
$D_{A,50}$ Aerodynamic diameter, µm		4.76	2.80	1.96	0.98	0.61	
$D_{AI,50}$ Aerodynamic impaction diameter, µm		4.94	2.97	2.07	1.15	0.78	
Mn - Particulate mass, mgm	2.5	2.1	2.1	0.5	0.7	0.5	0.5
% - Percent of Total	25.25	21.21	21.21	5.05	7.07	5.05	5.05
Cumulative percent	74.75	45.45	18.18	13.13	6.06	3.03	0.0
Cn - Concentration, grains/SCF							
Cumulative concentration, grains/SCF							

#15900

Reproduced from best available copy.

KVB

BRINK CASCADE IMPACTOR DATA SHEET

TEST NO. 36 LOAD

TEST SITE C % O_2

TEST DATE 6-1-78 FUEL WEST

SAMPLE LOCATION NECK OUT SPECIAL CONDITIONS

GAS VELOCITY DETERMINATION

PITOT TUBE ΔP .25 BAROMETRIC PRESS in. Hg, P_{bar} 29.36

GAS TEMP. °R, Ts 860 GAS STATIC PRESS in. H_2O -.68

PITOT CORRECTION FACTOR, Cp .86 GAS STATIC PRESS in. Hg abs., Ps -.05

MOLECULAR WT. FLUE GAS, MW_s 29.4

$$Vs = 85.48\ Cp \left(\frac{Ts\ \Delta P}{Ps\ MWs}\right)^{\frac{1}{2}} = 36.68 \text{ ft/sec}$$

IMPACTOR FLOW RATE DETERMINATION

NOZZLE DIAMETER inches, Dn .075

NOZZLE AREA ft^2, An 3.067×10^{-5} $An = \pi(Dn/24)^2$

$Qn = Vs\ An\ 60 = .0674$ ft^3/min at nozzle

$Qc = Qs \left(\frac{PsMWs}{1.3Ts}\right)^{\frac{1}{2}} = .0592$ ft^3/min corrected to calibration conditions

PRESSURE DROP ACROSS IMPACTOR FROM CALIBRATION CURVE 16.8" in. H_2O

OPERATING VACUUM (corrected for static pressure of duct) 17.5" in. H_2O

ISOKINETICS DETERMINATION

	SAMPLE TIME (θ)	METER READING (Vm)	METER TEMP (Tm)
INITIAL	14:34	0.000	110
FINAL	15:22	2.000	113
Δ	48	2.000	111.5

$\%H_2O$ = 12.1 %

$$I = \frac{1.667\ Ts\ Vm\ P_{bar}}{\theta\ Tm\ Vs\ Ps\ An\left(1-\frac{\%H_2O}{100}\right)} = 105.8\ \%$$

#15900

KVB

BRINK CASCADE IMPACTOR LAB WORKSHEET

TEST No. 36 LOCATION MECH OUT

TEST DATE 6-1-78 ENGINEER

TEST DESCRIPTION

PRE TEST WEIGHTS (GRAMS)

PLATE NO.		CYCLONE	1	2	3	4	5	FINAL FILTER
DATE WT.		—	6-1-78	—	—	—	—	→
TARE WT.	1	.4104	3.5118	3.0945	3.9826	3.7815	3.9024	.0339
	2	—	3.5116	3.0945	3.9826	3.7817	3.9024	.0339
	3	—	3.5118	3.0944	3.9825	3.7815	3.9025	—
	4	—	—	—	—	—	—	—
AVERAGE		0.4104	3.5117	3.0945	3.9826	3.7816	3.9024	0.0339

POST TEST WEIGHTS (GRAMS)

DATE WT.		6-17	—	—	—	—	—	→
GROSS WT.	1	.4129	3.5146	3.0971	3.9830	3.7822	3.9027	.0342
	2	—	3.5146	3.0972	3.9831	3.7823	3.9027	.0341
	3	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—
AVERAGE		0.4129	3.5146	3.0972	3.9831	3.7823	3.9027	0.0342

NET TEST RESULTS (MILLIGRAMS)

NET WT.	2.5	2.9	2.7	0.5	0.7	0.3	0.3
PERCENT							

TOTAL NET WEIGHT 9.9 mgm

#15900

KVB

BRINK CASCADE IMPACTOR DATA REDUCTION

TEST NO. 45 LOAD 97%

TEST SITE C % O_2 8.3

TEST DATE 6-17-78 FUEL Western Coal

SAMPLE LOCATION Multiclone Outlet SPECIAL CONDITIONS Normal Flyash Reinjection

---

ρp - Density of particles 2.5 g/cm^3

μ - Viscosity of flue gas 2.4×10^{-4} poise

MWs - Molecular wt. flue gas 28.78 g/g mole

ΔP_I - Pressure drop across impactor 15.6 in H_2O

Ps - Absolute stack pressure 29.33 in. Hg

Ts - Absolute stack temperature 845 °R

Qs - Actual flow rate at stack conditions .0645 ft^3/min

Vm - Dry gas volume ? SCF

Mn - Total particulate mass 43.6 mgm

Cn - Total concentration ? grains/SCF

I - Percent isokinetics ? %

Vs - Gas velocity 34.13 ft/sec.

Dn - Nozzle diameter 0.076 in.

Stage Number	CYCLONE	1	2	3	4	5	FINAL FILTER
Dj - Jet Diameter, cm		0.2490	0.1775	0.1396	0.0946	0.0731	
Fj - Press. factor, n.d.		0.0210	0.0273	0.0395	0.0903	0.3277	
$D_{S,50}$ Stokes diameter, µm		2.99	1.73	1.16	0.58	0.34	
$D_{A,50}$ Aerodynamic diameter, µm		4.82	2.84	1.93	1.00	0.63	
$D_{AI,50}$ Aerodynamic impaction diameter, µm		4.99	3.00	2.10	1.17	0.79	
Mn - Particulate mass, mgm	32.3	4.9	3.5	1.3	0.9	0.5	0.2
% - Percent of Total	74.08	11.24	8.03	2.98	2.06	1.15	0.46
Cumulative percent	25.92	14.68	6.65	3.67	1.61	0.46	0.00
Cn - Concentration, grains/SCF							
Cumulative concentration, grains/SCF							

#15900

KVB

BRINK CASCADE IMPACTOR DATA SHEET

TEST NO. 45 LOAD _____

TEST SITE C % O_2 _____

TEST DATE 6-17-78 FUEL WEST

SAMPLE LOCATION MECH OUT SPECIAL CONDITIONS _____

GAS VELOCITY DETERMINATION

PITOT TUBE ΔP .22 BAROMETRIC PRESS in. Hg, P_{bar} 29.38

GAS TEMP. °R, Ts 845 GAS STATIC PRESS in. H_2O -.70" H_2O

PITOT CORRECTION FACTOR, Cp _____ GAS STATIC PRESS in. Hg abs, Ps 29.33

MOLECULAR WT. FLUE GAS, MW_s 29.4

$$Vs = 85.48\ Cp \left(\frac{Ts\ \Delta P}{Ps\ MWs}\right)^{\frac{1}{2}} = 34.13 \text{ ft/sec}$$

IMPACTOR FLOW RATE DETERMINATION

NOZZLE DIAMETER inches, Dn .076

NOZZLE AREA ft^2, An 3.150×10^{-5} $An = \pi(Dn/24)^2$

$Qn = Vs\ An\ 60 = .0645$ ft^3/min at nozzle

$Qc = Qs \left(\frac{PsMWs}{1.3Ts}\right)^{\frac{1}{2}} = .0571$ ft^3/min corrected to calibration conditions

PRESSURE DROP ACROSS IMPACTOR FROM CALIBRATION CURVE 15.6 in. H_2O

OPERATING VACUUM (corrected for static pressure of duct) 16.3 in. H_2O

ISOKINETICS DETERMINATION

	SAMPLE TIME (θ)	METER READING (Vm)	METER TEMP (Tm)
INITIAL	—	—	114
FINAL	—	—	114
Δ	55.5 min.		

$\%H_2O$ = 11.0 Assume %

$$I = \frac{1.667\ Ts\ Vm\ P_{bar}}{\theta\ Tm\ Vs\ Ps\ An\left(1-\frac{\%H_2O}{100}\right)} = \_\_\_\_\_ \%$$

#15900

KVB

BRINK CASCADE IMPACTOR LAB WORKSHEET

TEST No. 45 LOCATION Site C - MECH

TEST DATE 6-17-78 ENGINEER

TEST DESCRIPTION

PRE TEST WEIGHTS (GRAMS)

PLATE NO.		CYCLONE	1	2	3	4	5	FINAL FILTER
DATE WT.		6-17-78	—	—	—	—	—	→
TARE WT.	1	.4224	3.4130	3.2720	3.4986	3.4652	3.3022	.0344
	2	—	3.4129	3.2721	3.4988	3.4653	3.3021	.0342
	3	—	3.4130	3.2722	3.4986	3.4650	3.3022	—
	4	—	—	—	—	—	—	—
AVERAGE		.4224	3.4129	3.2721	3.4987	3.4652	3.3022	.0343

POST TEST WEIGHTS (GRAMS)

DATE WT.		6-19-78	—	—	—	—	—	→
GROSS WT.	1	.4547	3.4180	3.2755	3.4999	3.4662	3.3028	.0345
	2	—	3.4178	3.2757	3.5000	3.4661	3.3028	.0345
	3	—	3.4177	3.2756	3.5000	3.4660	3.3026	.0345
	4	—	—	—	—	—	—	—
AVERAGE		.4547	3.4178	3.2756	3.5000	3.4661	3.3027	.0345

NET TEST RESULTS (MILLIGRAMS)

NET WT.	.0323	.0049	.0035	.0013	.0009	.0005	.0002
PERCENT							

TOTAL NET WEIGHT 43.6 mgm

#15900

SITE C
SASS GRAVIMETRICS

H	Test 44	10μ	273.5053	6.80% passing
		3μ	16.2894	1.25% passing
		1μ	3.0472	0.21% passing
		Filter	0.6065	
		Total	293,4484	
W	Test 45	10μ	253.0593	6.13% passing
		3μ	13.4433	0.98% passing
		1μ	2.6154	0.17% passing
		Filter	0.4670	
		Total	269.5850	
E	Test 46	10μ	211.1754	10.15% passing
		3μ	19.0989	2.03% passing
		1μ	3.1509	0.69% passing
		Filter	1.6135	
		Total	235.0387	

KVB
6648-01
November 2, 1978

Sample No.	K-22677	K-22678	K-22679
Sample Description	Fly Ash Test 9, Blr. Out. 5-1-78, Site C	Fly Ash Test 10, Blr. Out. 5-3-78	Fly Ash Test 24, Blr. Out. Site C
Bahco Particle Size Determination			
% Through #100 (149 Microns)	53.7	36.9	62.8

Results: Terminal Velocity	Diameter (Microns)	% Smaller	Diameter (Microns)	% Smaller	Diameter (Microns)	% Smaller
112	25.	11.9	25.	15.6	25.	13.1
79.0	21.	10.3	21.	13.9	21.	11.0
31.0	13.	6.8	13.	9.8	13.	6.7
12.3	8.2	4.0	8.4	6.4	8.2	3.8
4.15	4.8	2.3	4.8	3.7	4.8	2.1
0.96	2.3	1.0	2.3	1.9	2.3	0.8
0.35	1.4	0.5	1.4	1.0	1.4	0.3

Density, gms/cc (On #100 Mesh Material Only)	2.53	2.45	2.53
Screen Sizing			
% Through #10	100.0	100.0	100.0
16	99.8	99.3	99.9
30	90.1	77.3	98.1
50	75.2	52.5	89.8
100	53.7	36.9	62.8
200	24.8	20.8	31.3
325	15.0	17.5	19.2

KVB
6648-01
November 2, 1978

Sample No.	K-22680	K-22681
Sample Description	Fly Ash Test 36, Blr. Out. Site C	Fly Ash Test 42, Blr. Out. Site C, Beaker #77
Bahco Particle Size Determination		
% Through #100 (149 Microns)	58.3	53.2

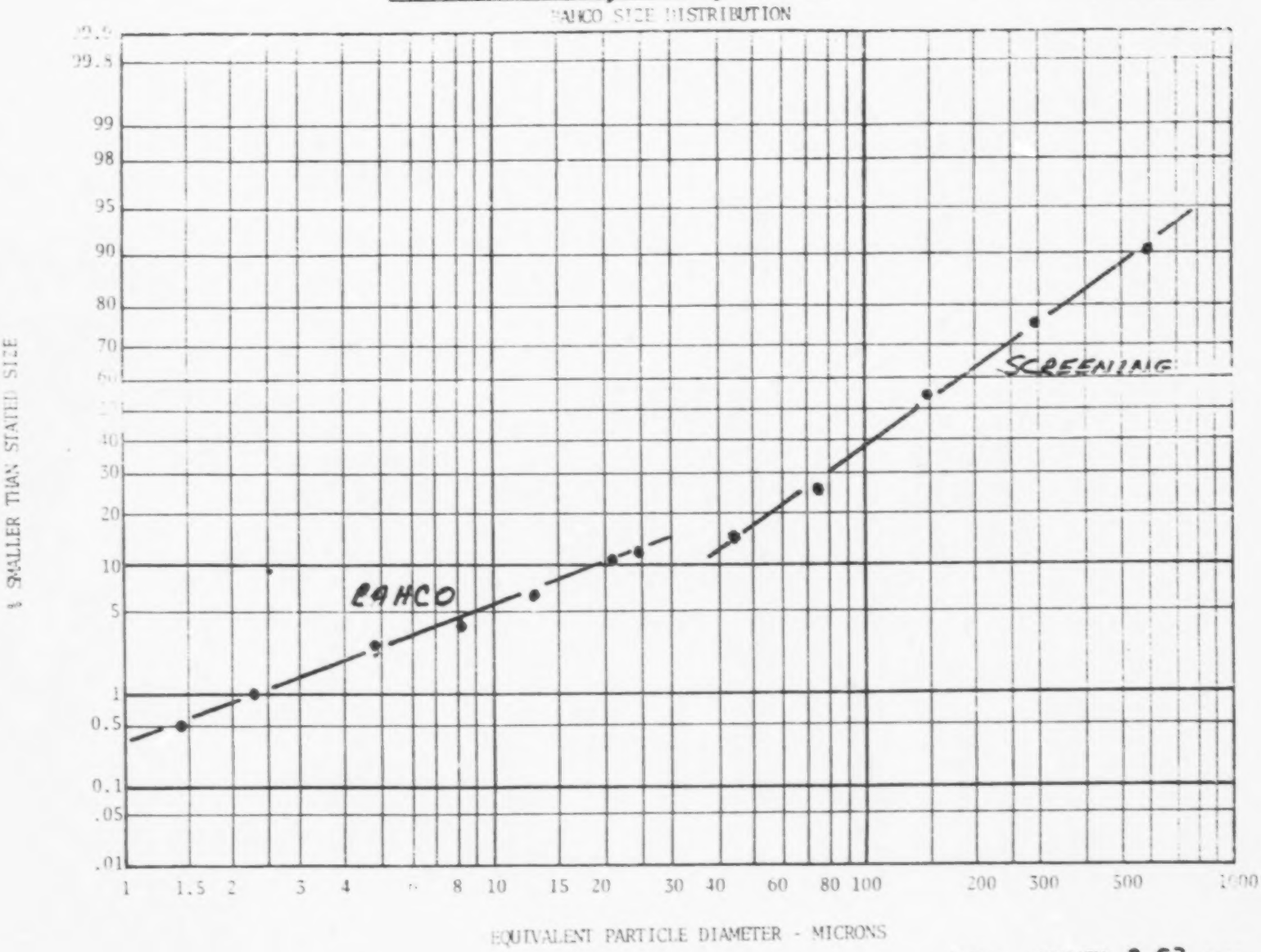
Results: Terminal Velocity	Diameter (Microns)	% Smaller	Diameter (Microns)	% Smaller
112	26.	22.2	27.	14.5
79.0	22.	19.1	22.	12.6
31.0	13.	12.6	14.	8.3
12.3	8.5	7.8	8.8	4.7
4.15	4.9	4.5	5.1	2.6
0.96	2.4	1.9	2.4	1.3
0.35	1.4	1.0	1.5	0.5

Density, gms/cc (On #100 Mesh Material Only)	2.38	2.21

Screen Sizing		
% Through #10	100.0	100.0
16	99.9	99.6
30	95.6	92.5
50	79.4	79.6
100	58.3	53.2
200	33.0	26.8
325	27.0	17.9

SAMPLE IDENTIFICATION KVB, Fly Ash Sample, TEST #9
Boiler Outlet, 5-1-78, Site C

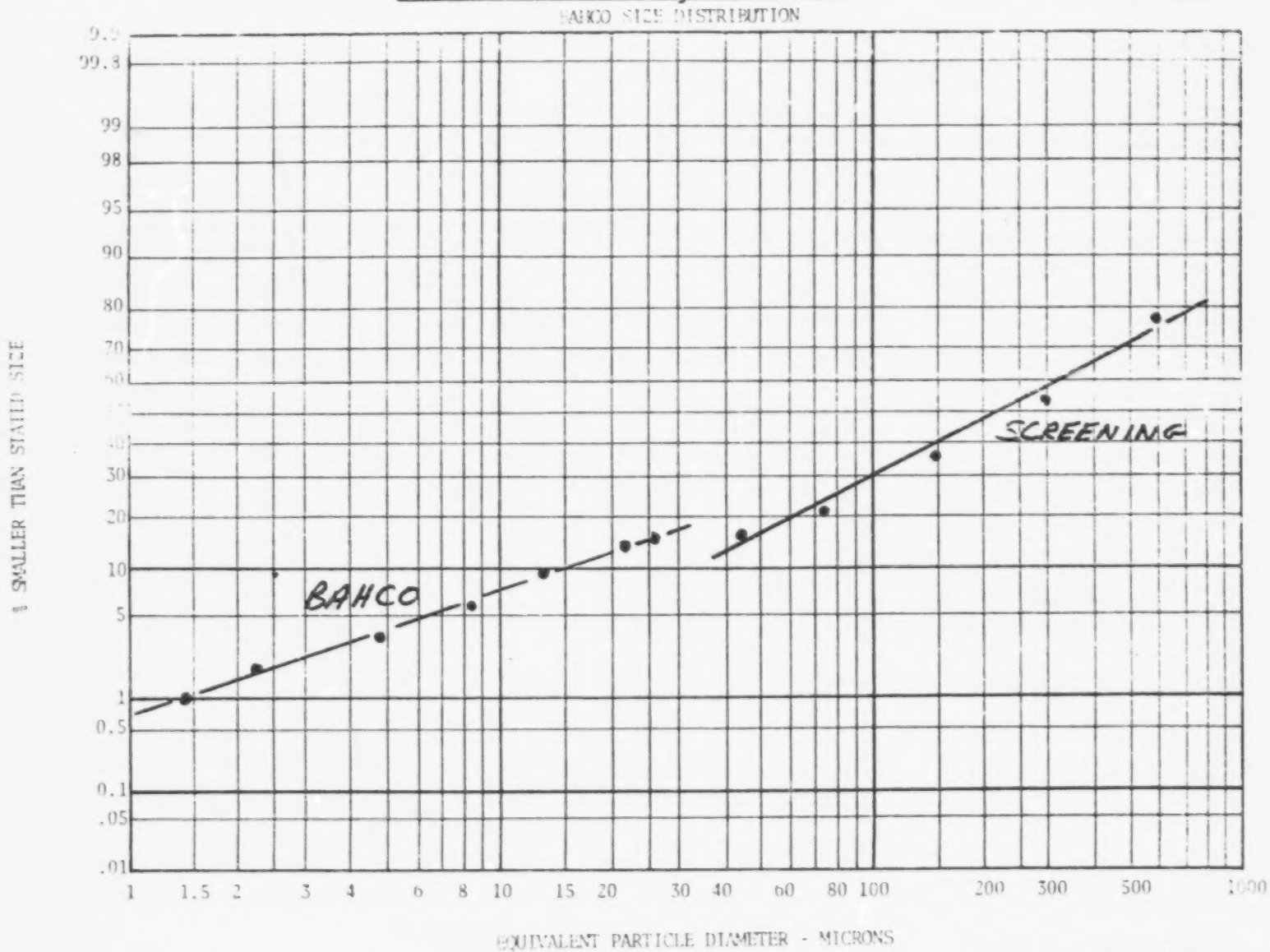
SAMPLE NO. K-22677
CHARGE NO. 6648-01



100 mm DENSITY 2.53 g/cc

SAMPLE IDENTIFICATION KVB, Fly Ash Sample, Test #10
Boiler Outlet, 5-3-78

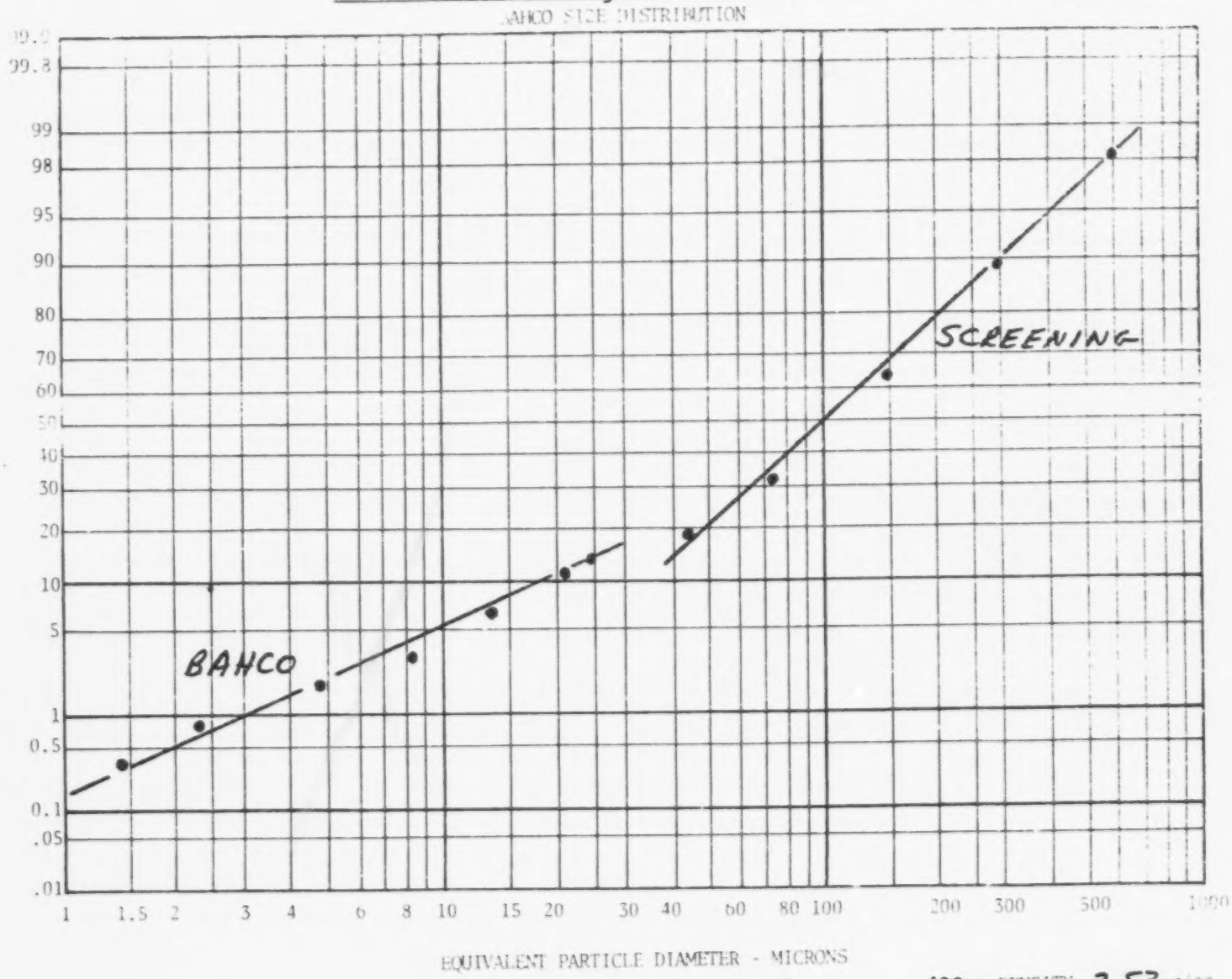
SAMPLE NO. K-22678
CHARGE NO. 6648-01



100mm DENSITY 2.45 g/cc

SAMPLE IDENTIFICATION KVB, Fly Ash Sample, TEST #24
Boiler Outlet, Site C

SAMPLE NO. K-22679
CHARGE NO. 6648-01

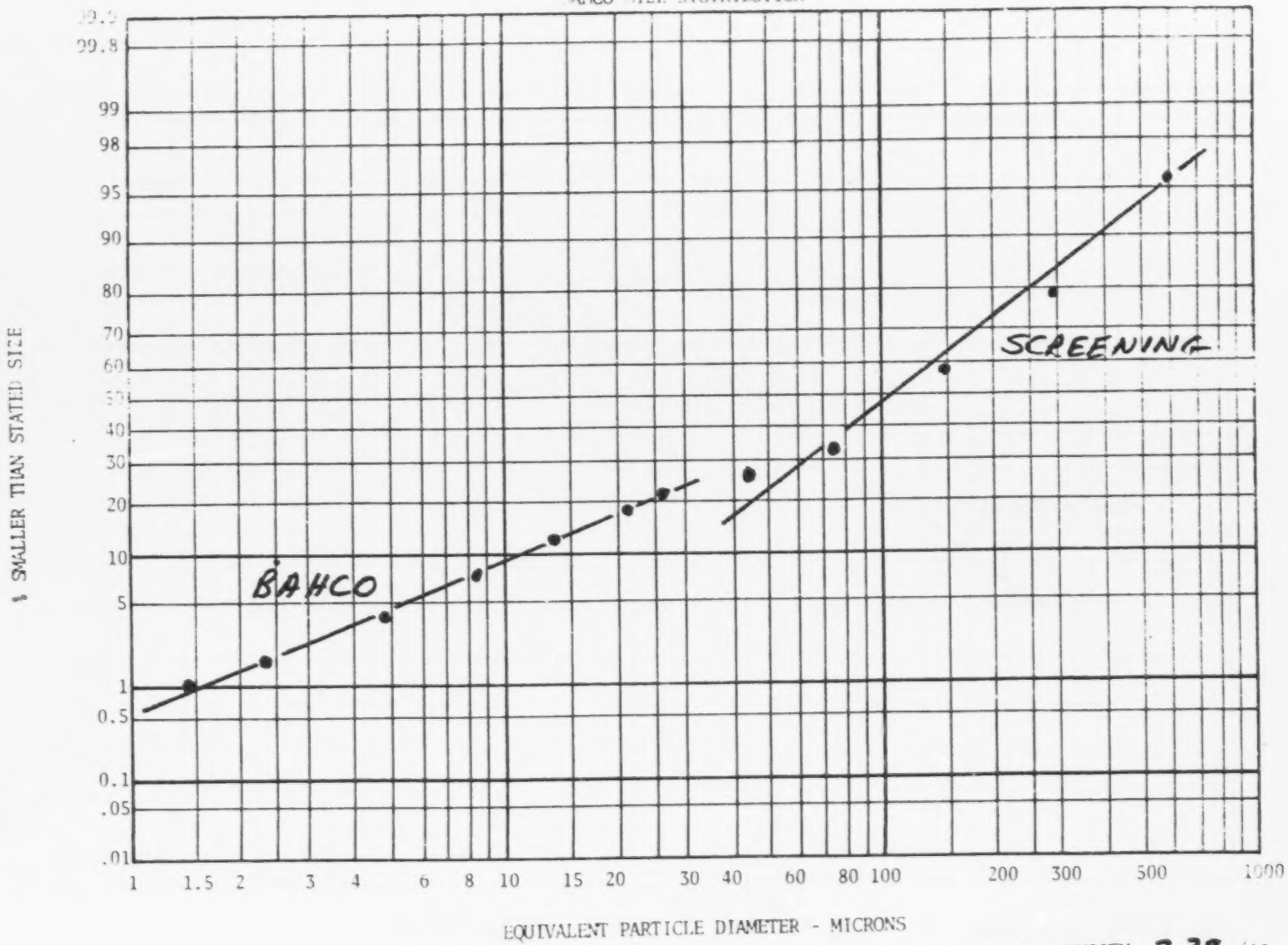


100μm DENSITY 2.53 g/cc

SAMPLE IDENTIFICATION KVB, Fly Ash Sample, TEST #36
Boiler Outlet, Site C

SAMPLE NO. K-22680
CHARGE NO. 6648-01

BAHCO SIZE DISTRIBUTION

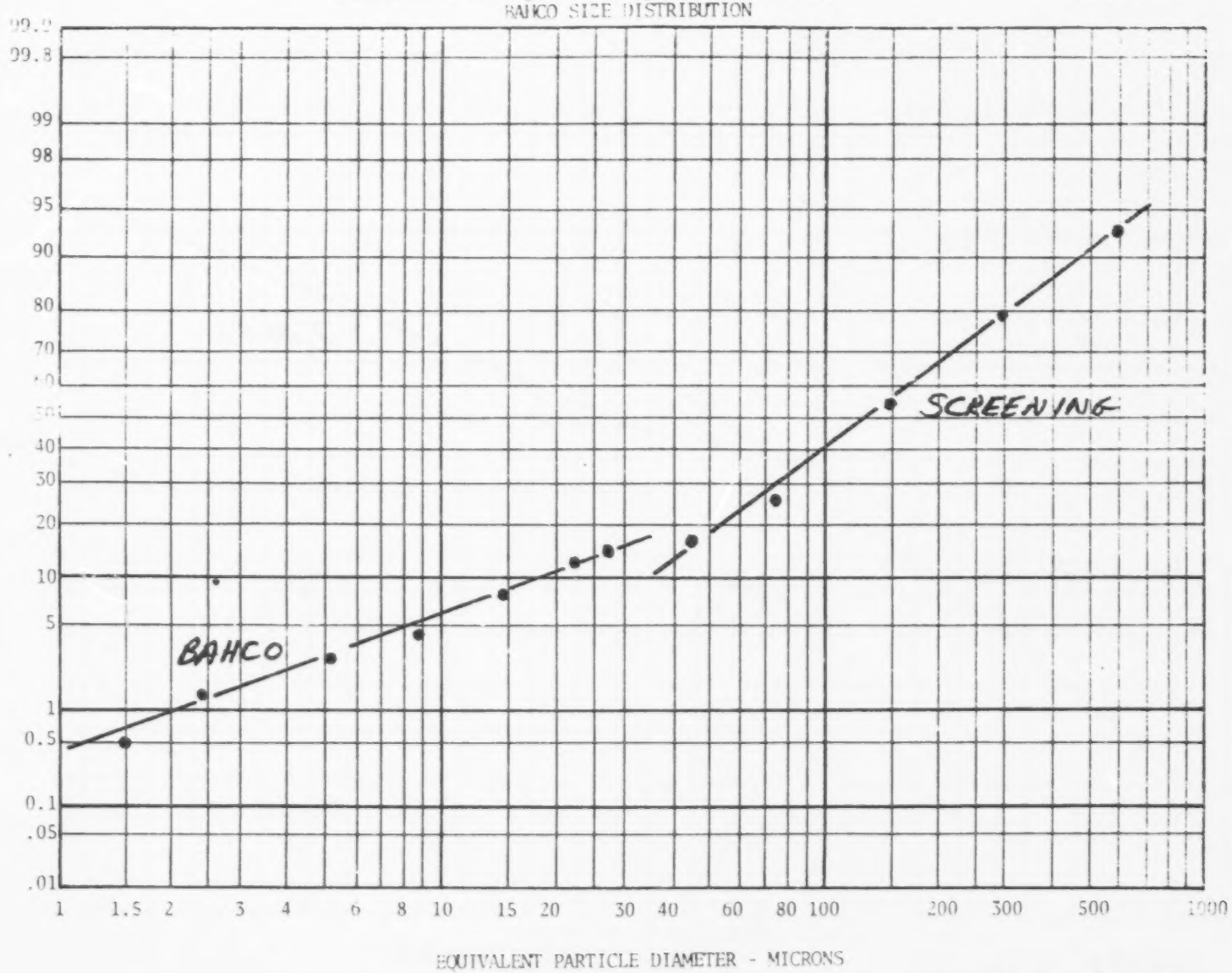


100mm DENSITY 2.38 g/cc

SAMPLE IDENTIFICATION KVB, Fly Ash Sample, TEST #42
Boiler Outlet, Site C, BEAKER #77

SAMPLE NO. K-22681
CHARGE NO. 6648-01

BAHCO SIZE DISTRIBUTION



10 cm DENSITY 2.21 g/cc

SECTION 5.0

FUEL AND ASH ANALYSIS

		PAGE
5.1	COMMERCIAL TESTING & ENGINEERING COMPANY ANALYSIS	352
5.2	COMBUSTIBLES DATA SHEET	391
5.3	SIEVE ANALYSIS TEST REPORT	396

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 8
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16814

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	6.87	xxxxx
% Ash	12.52	13.44
% Volatile	34.86	37.43
% Fixed Carbon	45.75	49.13
	100.00	100.00
Btu	11810	12682
% Sulfur	2.51	2.70

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx°F
Softening (H = W), ST	xxxxx °F	xxxxx°F
Softening (H = ½W), HT	xxxxx °F	xxxxx°F
Fluid, FT	xxxxx °F	xxxxx°F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 9
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-168 15

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.86	xxxxx
% Ash	12.01	12.76
% Volatile	36.50	38.77
% Fixed Carbon	45.63	48.47
	100.00	100.00
Btu	11974	12719
% Sulfur	3.05	3.24

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

353

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 10
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16816

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	6.47	xxxxx
% Ash	10.73	11.47
% Volatile	35.55	38.01
% Fixed Carbon	47.25	50.52
	100.00	100.00
Btu	12111	12948
% Sulfur	2.89	3.09

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

CHICAGO, IL • BILLINGS, MT • BIRMINGHAM, AL • CHARLESTON, WV • CLARKSBURG, WV • CLEVELAND, OH • DENVER, CO • GOLDEN, CO • HENDERSON, KY • MIDDLESBORO, KY • MOBILE, AL • NEW ORLEANS, LA • NORFOLK, VA • PIKEVILLE, KY • VANCOUVER, B.C. CAN.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 11
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16817

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	6.53	xxxxx
% Ash	10.81	11.56
% Volatile	34.50	36.91
% Fixed Carbon	48.16	51.53
	100.00	100.00
Btu	11992	12829
% Sulfur	2.65	2.83

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
[illegible]	xxxxx	xxxxx
[illegible]	xxxxx	xxxxx
[illegible]	xxxxx	xxxxx
[illegible]	xxxxx	xxxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

355

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by:

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 12
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16818

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.99	xxxxx
% Ash	10.43	11.10
% Volatile	34.81	37.03
% Fixed Carbon	48.77	51.87
	100.00	100.00
Btu	12184	12961
% Sulfur	2.70	2.87

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

SINCE 1908

OFFICE TEL. (312) 264-1173

June 28, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by
KVB, Inc.

P. O. No. 323-15900

Test No. 13

Kind of sample reported to us	Coal
Sample taken at	Site C
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16819

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.88	xxxxx
% Ash	13.75	14.61
% Volatile	33.77	35.88
% Fixed Carbon	46.60	49.51
	100.00	100.00
Btu	11607	12332
% Sulfur	5.00	5.31

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

357

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

SINCE 1908

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 14
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-168 20

SHORT PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	3.48	xxxxx
% Ash	10.95	11.34
Btu	35.86	37.15
% Sulfur	49.71	51.51
	100.00	100.00
	12678	13135
	2.74	2.84

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 15
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16821

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.63	xxxxx
% Ash	10.19	10.68
% Volatile	35.53	37.25
% Fixed Carbon	49.65	52.07
	100.00	100.00
Btu	12539	13147
% Sulfur	3.00	3.15

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx °F	xxxxx °F
Softening (Hemispherical)	xxxxx °F	xxxxx °F
Softening (Spherical)	xxxxx °F	xxxxx °F
Fluid	xxxxx °F	xxxxx °F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

359

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 16
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16822

SHORT PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.38	xxxxx
% Ash	12.23	12.79
Btu	33.69	35.23
% Sulfur	49.70	51.98
	100.00	100.00
	12340	12906
	2.44	2.55

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 19
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16823

SHORT PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.89	xxxxx
% Ash	10.27	10.80
Btu	33.92	35.67
% Sulfur	50.92	53.53
	100.00	100.00
	12500	13143
	2.25	2.37

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx°F
Softening (H = W), ST	xxxxx °F	xxxxx°F
Softening (H = ½W), HT	xxxxx °F	xxxxx°F
Fluid, FT	xxxxx °F	xxxxx°F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

361

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 30, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Coal Sample
Site C
Test No. 20

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16824

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.18	xxxxx
% Ash	10.54	11.00
% Volatile	35.79	37.35
% Fixed Carbon	49.49	51.65
	100.00	100.00
Btu	12576	13125
% Sulfur	2.85	2.97

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 23
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16825

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	25.35	xxxxx
% Ash	9.02	12.08
% Volatile	29.36	39.33
% Fixed Carbon	36.27	48.59
	100.00	100.00
Btu	8480	11360
% Sulfur	0.86	1.15

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation (IT)	xxxxx °F	xxxxx °F
Softening (H = W) (ST)	xxxxx °F	xxxxx °F
Softening (H = ½W) (HT)	xxxxx °F	xxxxx °F
Fluid (FT)	xxxxx °F	xxxxx °F

H = Cone Height
W = Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Hauser, Manager, Midwest Division

363

RAH: rjl

Charter Member

Reproduced from best available copy.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 24
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16826

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	26.02	xxxxx
% Ash	8.20	11.09
% Volatile	28.28	38.22
% Fixed Carbon	37.50	50.69
	100.00	100.00
Btu	8527	11526
% Sulfur	0.67	0.91

FUSION TEMPERATURE OF ASH

	Reducing		Oxidizing	
Initial Deformation, IT	xxxxx	°F	xxxxx	°F
Softening (H = W), ST	xxxxx	°F	xxxxx	°F
Softening (H = ½W), HT	xxxxx	°F	xxxxx	°F
Fluid, FT	xxxxx	°F	xxxxx	°F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. [illegible], Manager, Midwest Division

RAH: rjl

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 25
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16827

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	26.25	xxxxx
% Ash	8.18	11.09
% Volatile	28.11	38.12
% Fixed Carbon	37.46	50.79
	100.00	100.00
Btu	8558	11604
% Sulfur	0.53	0.72

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH: rjl

Charter Member

CHICAGO, IL • BILLINGS, MT • BIRMINGHAM, AL • CHARLESTON, WV • CLARKSBURG, WV • CLEVELAND, OH • DENVER, CO • GOLDEN, CO • HENDERSON, KY • MIDDLESBORO, KY • MOBILE, AL • NEW ORLEANS, LA • NORFOLK, VA • PIKEVILLE, KY • VANCOUVER, B.C. CAN.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 226 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 26
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16828

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	26.35	xxxxx
% Ash	9.15	12.42
% Volatile	27.97	37.98
% Fixed Carbon	36.53	49.60
	100.00	100.00
Btu	8407	11414
% Sulfur	0.99	1.35

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH: rjl

368

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 27
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16829

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	23.50	xxxxx
% Ash	8.88	11.61
% Volatile	30.09	39.34
% Fixed Carbon	37.53	49.05
	100.00	100.00
Btu	8877	11604
% Sulfur	0.99	1.30

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH: rjl

Charter Member

367

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 30, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Coal Sample
Site C
Test No. 28

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16830

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	25.46	xxxxx
% Ash	12.14	16.29
% Volatile	27.82	37.32
% Fixed Carbon	34.58	46.39
	100.00	100.00
Btu	8060	10813
% Sulfur	0.54	0.72

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 29
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16831

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	25.77	xxxxx
% Ash	9.19	12.38
% Volatile	29.08	39.18
% Fixed Carbon	35.96	48.44
	100.00	100.00
Btu	8419	11343
% Sulfur	0.59	0.79

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Analytical

RAH: rjl

369

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 30, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by
KVB, Inc.

P. O. No. 323-15900

Coal Sample
Test No. 35
Site C

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16832

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	26.10	xxxxx
% Ash	9.22	12.48
% Volatile	30.81	41.69
% Fixed Carbon	33.87	45.83
	100.00	100.00
Btu	8502	11504
% Sulfur	0.81	1.10

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-5434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 28, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by KVB, Inc.
Coal Sample
Site C
Test #36
P. O. #323-15900

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16833

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	26.02	xxxxx
% Ash	8.50	11.49
% Volatile	28.69	38.78
% Fixed Carbon	36.79	49.73
	100.00	100.00
BTU	8388	11338
% Sulfur	0.64	0.87

FUSION TEMPERATURE OF ASH

Reducing	Oxidizing
Initial Deformation °F	xxxxx °F	xxxxx °F
Softening (Hemispherical) °F	xxxxx °F	xxxxx °F
Softening (Spherical) °F	xxxxx °F	xxxxx °F
Fluid °F	xxxxx °F	xxxxx °F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:rjl

371

Charter Member

CHICAGO, IL • BILLINGS, MT • BIRMINGHAM, AL • CHARLESTON, WV • CLARKSBURG, WV • CLEVELAND, OH • DENVER, CO • GOLDEN, CO • HENDERSON, KY • MIDDLESBORO, KY • MOBILE, AL • NEW ORLEANS, LA • NORFOLK, VA • PIKEVILLE, KY • VANCOUVER, B.C. CAN.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 284-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 40
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16834

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	26.05	xxxxx
% Ash	8.56	11.57
% Volatile	28.95	39.14
% Fixed Carbon	36.44	49.29
	100.00	100.00
Btu	8417	11381
% Sulfur	0.72	0.98

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 41
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16835

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	9.72	xxxxx
% Ash	8.29	9.18
% Volatile	31.73	35.15
% Fixed Carbon	50.26	55.67
	100.00	100.00
Btu	11944	13229
% Sulfur	0.74	0.82

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx °F
Softening (H = W), ST	xxxxx °F	xxxxx °F
Softening (H = ½W), HT	xxxxx °F	xxxxx °F
Fluid, FT	xxxxx °F	xxxxx °F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

373

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 42
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-168 36

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	9.38	xxxxx
% Ash	10.95	12.08
% Volatile	29.79	32.87
% Fixed Carbon	49.88	55.05
	100.00	100.00
Btu	11513	12705
% Sulfur	0.93	1.03

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, IT	xxxxx °F	xxxxx°F
Softening (H = W), ST	xxxxx °F	xxxxx°F
Softening (H = ½W), HT	xxxxx °F	xxxxx°F
Fluid, FT	xxxxx °F	xxxxx°F

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

Site C
Test No. 43
Coal Sample

Kind of sample reported to us	Coal
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-168 37

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	8.17	xxxxx
% Ash	8.49	9.25
% Volatile	31.31	34.10
% Fixed Carbon	52.03	56.65
	100.00	100.00
Btu	12106	13183
% Sulfur	0.96	1.05

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation, °F	xxxxx	xxxxx
Softening (H = W), °F	xxxxx	xxxxx
Hemispherical (H = B), °F	xxxxx	xxxxx
Fluid, °F	xxxxx	xxxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

R. A. Houser, Manager

RAH:lau

375

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

July 21, 1978

KVB, INC.
Shelard Tower Ste. 1375
600 S. County 18
Minneapolis, MN 54226

Kind of sample reported to us	Coal	Sample identification by	KVB, Inc.
Sample taken at	xxxxx		Coal Site C
Sample taken by	KVB, Inc.		Test #44
Date sampled	xxxxx		P. O. #323-15900

Analysis report no. 71-16354

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	24.12	xxxxx
% Ash	8.63	11.37
% Volatile	29.59	38.99
% Fixed Carbon	37.66	49.64
	100.00	100.00
Btu	8823	11628
% Sulfur	0.56	0.74
% Alk. as Na_2O	xxxxx	0.09

SULFUR FORMS		
% Pyritic Sulfur	0.15	0.20
% Sulfate Sulfur	0.02	0.03
% Organic Sulfur	0.39	0.51

WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2175°F	xxxxx
Softening (H = W)	2240°F	xxxxx
Softening (H = ½W)	2290°F	xxxxx
Fluid	2330°F	xxxxx

H is Cone Height
W is Cone Width

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = xxxxx
FREE SWELLING INDEX = xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	24.12	xxxxx
Carbon	51.96	68.48
Hydrogen	3.37	4.44
Nitrogen	1.00	1.32
Chlorine	0.02	0.02
Sulfur	0.56	0.74
Ash	8.63	11.37
Oxygen (diff)	10.34	13.63
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	43.62
Alumina, Al_2O_3	16.42
Titania, TiO_2	0.88
Ferric oxide, Fe_2O_3	4.49
Lime, CaO	16.00
Magnesia, MgO	3.60
Potassium oxide, K_2O	0.55
Sodium oxide, Na_2O	0.45
Sulfur trioxide, SO_3	12.69
Phos. pentoxide, P_2O_5	0.21
Undetermined	1.09
	100.00

SILICA VALUE = 64.42
BASE: ACID RATIO 0.41
T_{250} Temperature = 2400°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Midwest Division

RAH:rjl

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

July 20, 1978

KVB, INC.
Shelard Tower Ste. 1375
600 S. County 18
Minneapolis, MN 54226

Kind of sample reported to us	Coal	Sample identification by	KVB, Inc.
Sample taken at	xxxxx		Coal Site C Test #45
Sample taken by	KVB, Inc.		
Date sampled	xxxxx		P. O. 323-15900

Analysis report no. 71-16355

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	26.57	xxxxx
% Ash	8.59	11.70
% Volatile	28.59	38.94
% Fixed Carbon	36.25	49.36
	100.00	100.00
Btu	8457	11517
% Sulfur	0.54	0.74
% Alk. as Na_2O	xxxxx	0.12
SULFUR FORMS		
% Pyritic Sulfur	0.04	0.05
% Sulfate Sulfur	0.01	0.02
% Organic Sulfur	0.49	0.67
WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	26.57	xxxxx
Carbon	49.90	67.95
Hydrogen	3.17	4.31
Nitrogen	1.04	1.42
Chlorine	0.01	0.01
Sulfur	0.54	0.74
Ash	8.59	11.70
Oxygen (diff)	10.18	13.87
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	43.61
Alumina, Al_2O_3	18.57
Titania, TiO_2	0.99
Ferric oxide, Fe_2O_3	5.13
Lime, CaO	12.80
Magnesia, MgO	4.04
Potassium oxide, K_2O	0.60
Sodium oxide, Na_2O	0.60
Sulfur trioxide, SO_3	12.25
Phos. pentoxide, P_2O_5	0.18
Undetermined	1.23
	100.00

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2190°F	xxxxx
Softening (H = W)	2250°F	xxxxx
Softening (H = ½W)	2325°F	xxxxx
Fluid	2395°F	xxxxx

H is Cone Height
W is Cone Width

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = xxxxx
FREE SWELLING INDEX = xxxxx

SILICA VALUE = 66.50
BASE: ACID RATIO 0.37
T_{250} Temperature = 2450°F

RAH:lf

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Midwest Division

377

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16138 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

July 20, 1978

KVB, INC.
Shelard Tower Ste. 1375
600 S. County Road 18
Minneapolis, Minn. 54426

Kind of sample reported to us: Coal

Sample taken at: xxxxx

Sample taken by: KVB, Inc.

Date sampled: xxxxx

Sample identification by

KVB, Inc.

Coal
Site C
Test #46
P. O. 323-15900

Analysis report no. 71-16356

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	4.54	xxxxx
% Ash	9.66	10.12
% Volatile	35.49	37.18
% Fixed Carbon	50.31	52.70
	100.00	100.00
Btu	12831	13442
% Sulfur	2.57	2.69
% Alk. as Na_2O	xxxxx	0.17
SULFUR FORMS		
% Pyritic Sulfur	1.27	1.33
% Sulfate Sulfur	0.23	0.24
% Organic Sulfur	1.07	1.12
WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	4.54	xxxxx
Carbon	71.46	74.86
Hydrogen	4.79	5.02
Nitrogen	1.04	1.09
Chlorine	0.07	0.07
Sulfur	2.57	2.69
Ash	9.66	10.12
Oxygen (diff)	5.87	6.15
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	43.76
Alumina, Al_2O_3	21.64
Titania, TiO_2	1.03
Ferric oxide, Fe_2O_3	24.83
Lime, CaO	2.45
Magnesia, MgO	0.90
Potassium oxide, K_2O	1.65
Sodium oxide, Na_2O	0.60
Sulfur trioxide, SO_3	2.81
Phos. pentoxide, P_2O_5	0.21
Undetermined	0.12
	100.00

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2060°F	xxxxx
Softening (H = W)	2180°F	xxxxx
Softening (H = ½W)	2310°F	xxxxx
Fluid	2430°F	xxxxx

H is Cone Height
W is Cone Width

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = xxxxx
FREE SWELLING INDEX = xxxxx

SILICA VALUE = 60.83
BASE: ACID RATIO 0.46
T_{250} Temperature = 2340°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Midwest Division

RAH:lf

378

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

July 20, 1978

KVB, INC.
Shelard Tower Ste. 1375
600 S. County Road 18
Minneapolis, MN 54226

Kind of sample reported to us: Coal

Sample taken at: xxxxx

Sample taken by: KVB, Inc.

Date sampled: xxxxx

Sample identification by:
KVB, Inc.
Eastern (low fusion) coal comp.
Site C
P. O. 323-15900

Analysis report no. 71-16359

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	2.36	xxxxx
% Ash	11.32	11.59
% Volatile	36.15	37.02
% Fixed Carbon	50.17	51.39
	100.00	100.00
Btu	12678	12984
% Sulfur	2.95	3.02
% Alk. as Na_2O	xxxxx	0.20

SULFUR FORMS		
% Pyritic Sulfur	xxxxx	xxxxx
% Sulfate Sulfur	xxxxx	xxxxx
% Organic Sulfur	xxxxx	xxxxx

WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	1985°F	2430°F
Softening (Hemispherical)	2130°F	2480°F
Softening (Half Sphere)	2265°F	2525°F
Fluid	2390°F	2570°F

% EQUILIBRIUM MOISTURE	xxxxx
HARDGROVE GRINDABILITY INDEX	62
FREE SWELLING INDEX	7

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	2.36	xxxxx
Carbon	70.64	72.35
Hydrogen	4.79	4.91
Nitrogen	1.32	1.35
Chlorine	0.06	0.06
Sulfur	2.95	3.02
Ash	11.32	11.59
Oxygen (diff)	6.56	6.72
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica: SiO_2	43.62
Alumina, Al_2O_3	21.07
Titania, TiO_2	1.10
Ferric oxide, Fe_2O_3	22.99
Lime, CaO	2.30
Magnesia, MgO	3.20
Potassium oxide, K_2O	1.85
Sodium oxide, Na_2O	0.52
Sulfur trioxide, SO_3	3.01
Phos. pentoxide, P_2O_5	0.24
Undetermined	0.10
	100.00

SILICA VALUE =	60.49
BASE ACID RATIO	0.47
T_{250} Temperature	2335° F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser

RAH:lf

379

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL (312) 264-1173

SINCE 1908

July 20, 1978

KVB, INC.
Shelard Tower Ste. 1375
600 S. County Road 18
Minneapolis, MN 54226

Kind of sample reported to us: Coal

Sample taken at: xxxxx

Sample taken by: KVB, Inc.

Date sampled: xxxxx

Sample identification by

KVB, Inc.

Western Coal Composite
Site C
P. O. 323-15900

Analysis report no. 71-16357

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	24.44	xxxxx
% Ash	9.05	11.98
% Volatile	30.35	40.17
% Fixed Carbon	36.16	47.85
	100.00	100.00
Btu	8614	11401
% Sulfur	0.69	0.91
% Alk. as Na_2O	xxxxx	0.14
SULFUR FORMS		
% Pyritic Sulfur	xxxxx	xxxxx
% Sulfate Sulfur	xxxxx	xxxxx
% Organic Sulfur	xxxxx	xxxxx
WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	24.44	xxxxx
Carbon	50.91	67.38
Hydrogen	3.29	4.36
Nitrogen	0.77	1.02
Chlorine	0.01	0.01
Sulfur	0.69	0.91
Ash	9.05	11.98
Oxygen (diff)	10.84	14.34
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	40.60
Alumina, Al_2O_3	18.56
Titania, TiO_2	0.88
Ferric oxide, Fe_2O_3	7.40
Lime, CaO	13.10
Magnesia, MgO	3.84
Potassium oxide, K_2O	0.70
Sodium oxide, Na_2O	0.72
Sulfur trioxide, SO_3	13.89
Phos. pentoxide, P_2O_5	0.18
Undetermined	0.13
	100.00

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2175°F	2235°F
Softening (H = W)	2260°F	2285°F
Softening (H = ½W)	2335°F	2345°F
Fluid	2400°F	2420°F

H is Cone Height
W is Cone Width

% EQUILIBRIUM MOISTURE = 24.19
HARDGROVE GRINDABILITY INDEX = 49
FREE SWELLING INDEX = 0

SILICA VALUE = 62.52
BASE: ACID RATIO 0.43
T_{250} Temperature = 2375°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

July 20, 1978

KVB, INC.
Shelard Tower Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Kind of sample reported to us: Coal

Sample taken at: xxxxx

Sample taken by: KVB, Inc.

Date sampled: xxxxx

Sample identification by:
KVB, Inc.
Eastern (High fusion) coal comp.
Site C
P. O. 323-15900

Analysis report no. 71-16358

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	13.27	xxxxx
% Ash	7.93	9.14
% Volatile	31.55	36.38
% Fixed Carbon	47.25	54.48
	100.00	100.00
Btu	11219	12935
% Sulfur	0.75	0.86
% Alk. as Na_2O	xxxxx	0.15

SULFUR FORMS		
% Pyritic Sulfur	xxxxx	xxxxx
% Sulfate Sulfur	xxxxx	xxxxx
% Organic Sulfur	xxxxx	xxxxx

WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2145° F	2355° F
Softening (H = W)	2235° F	2430° F
Softening (H = ½W)	2330° F	2510° F
Fluid	2420° F	2570° F

H is Cone Height
W is Cone Width

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = 44
FREE SWELLING INDEX = 1

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	13.27	xxxxx
Carbon	64.30	74.14
Hydrogen	4.02	4.63
Nitrogen	1.41	1.63
Chlorine	0.07	0.08
Sulfur	0.75	0.86
Ash	7.93	9.14
Oxygen (diff)	8.25	9.52
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	49.23
Alumina, Al_2O_3	23.21
Titania, TiO_2	1.14
Ferric oxide, Fe_2O_3	10.05
Lime, CaO	5.50
Magnesia, MgO	2.12
Potassium oxide, K_2O	1.75
Sodium oxide, Na_2O	0.50
Sulfur trioxide, SO_3	6.24
Phos. pentoxide, P_2O_5	0.18
Undetermined	0.08
	100.00

SILICA VALUE = 73.59
BASE: ACID RATIO 0.27
T_{250} Temperature = 2590°F

RAH:lf

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Midwest Division

Charter Member

381

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 28, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900

See below for Test No.

Kind of sample reported to us	Boiler Ash
Sample taken at	Site C
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. See below

LAB. NO.	TEST NO.	%COMBUSTIBLE
71-16886	10	48.26
71-16887	36	48.85

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by KVB, Inc.

Kind of sample reported to us	Mech. Hopper Ash	Mech. Hopper Ash
Sample taken at	Site C	Site C
Sample taken by	KVB, Inc.	P. O. #323-15900
Date sampled	xxxxx	

Analysis report no. See Below

LAB NO.	TEST NO.	%COMBUSTIBLE	LAB NO.	TEST NO.	%COMBUSTIBLE
71-16862	8	16.86	71-16874	24	3.79
71-16863	9	32.62	71-16875	25	2.88
71-16864	10	21.56	71-16876	26	4.34
71-16865	11	40.91	71-16877	27	4.24
71-16866	12	30.16	71-16878	28	4.43
71-16867	13	57.73	71-16879	29	3.23
71-16868	14	23.20	71-16880	35	3.31
71-16869	15	18.97	71-16881	36	9.32
71-16870	16	23.18	71-16882	40	17.60
71-16871	19	24.12	71-16883	41	11.07
71-16872	20	21.68	71-16884	42	11.26
71-16873	23	7.90	71-16885	43	12.16

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:rjl

383

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

July 12, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

		Sample identification by:
Kind of sample reported to us	Ash	KVB, Inc.
Sample taken at	xxxxx	Mechanical Hopper Ash
Sample taken by	KVB, Inc.	Site C
Date sampled	xxxxx	Test #44
		P. O. #323-15900

Analysis report no. 71-16363

	Dry Basis
%Ash	93.10
%Combustible	6.90
	100.00
%Sulfur	0.19

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:rjl

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

July 12, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

		Sample identification by
		KVB, Inc.
Kind of sample reported to us	Ash	Mechanical Hopper Ash
		Site C
Sample taken at	xxxxx	Test #45
Sample taken by	KVB, Inc.	P. O. #323-15900
Date sampled	xxxxx	

Analysis report no. 71-16364

	Dry Basis
%Ash	95.77
%Combustible	4.23
	100.00
%Sulfur	0.28

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:rjl

385

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

July 12, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

Mechanical Hopper Ash

Site C

Test #46

P. O. #323-15900

Kind of sample reported to us	Ash
Sample taken at	xxxxx
Sample taken by	KVB, Inc.
Date sampled	xxxxx

Analysis report no. 71-16365

	Dry Basis
%Ash	85.93
%Combustible	14.07
	100.00
%Sulfur	0.30

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:rjl

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

June 28, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

P. O. No. 323-15900
See below for Test No.

Kind of sample reported to us: Bottom Ash

Sample taken at: Site C

Sample taken by: KVB, Inc.

Date sampled: xxxxx

Analysis report no. See below

LAB. NO.	TEST NO.	%COMBUSTIBLE	LAB. NO.	TEST NO.	%COMBUSTIBLE
71-16838	8	3.03	71-16850	24	21.08
71-16839	9	0.72	71-16851	25	37.53
71-16840	10	2.34	71-16852	26	5.82
71-16841	11	1.55	71-16853	27	34.43
71-16842	12	21.23	71-16854	28	18.99
71-16843	13	19.17	71-16855	29	6.26
71-16744	14	2.07	71-16856	35	51.41
71-16745	15	1.51	71-16857	36	2.81
71-16846	16	5.31	71-16858	40	0.29
71-16847	19	23.55	71-16859	41	1.14
71-16848	20	9.07	71-16860	42	1.92
71-16849	23	20.43	71-16861	43	0.79

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lau

387

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

July 12, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

		Sample identification by
Kind of sample reported to us	Ash	KVB, Inc.
Sample taken at	xxxxx	Bottom Ash
Sample taken by	KVB, Inc.	Site C
Date sampled	xxxxx	Test #44
		P. O. #323-15900

Analysis report no. 71-16360

	Dry Basis
%Ash	97.55
%Combustible	2.45
	100.00
%Sulfur	0.35

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:rjl

368

Charter Member

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 29

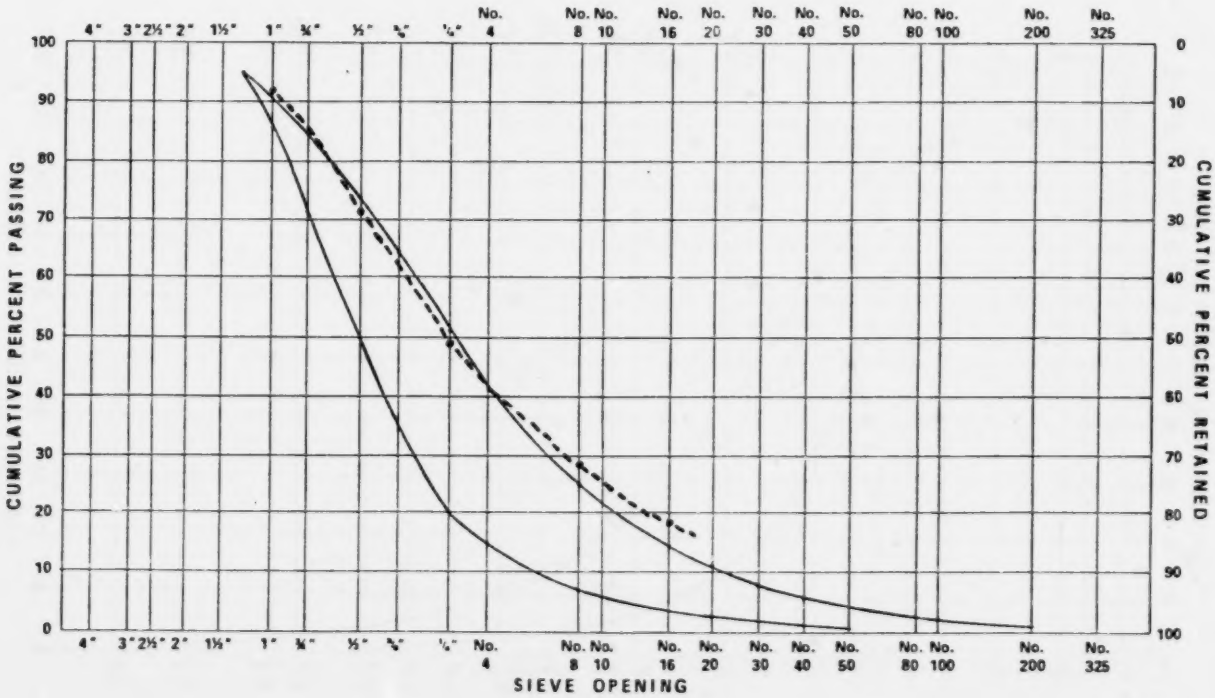
DATE SAMPLE TAKEN 5-26-78

TEST SITE C

TEST PERFORMED BY SU.

SAMPLE IDENTIFICATION WESTERN

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	278.9	793.8	514.9	8.0	6461.2	100.0	1
1"		1614.7	1335.8	20.7	5946.3	92.0	2
1/2"		1706.4	1427.5	22.1	4610.5	71.3	4
1/4"		1599.6	1320.7	20.4	3183.0	49.2	8
#8		955.5	676.6	10.5	1862.3	28.8	16
#16		1464.6	1185.7	18.4	1185.7	18.3	16



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 35

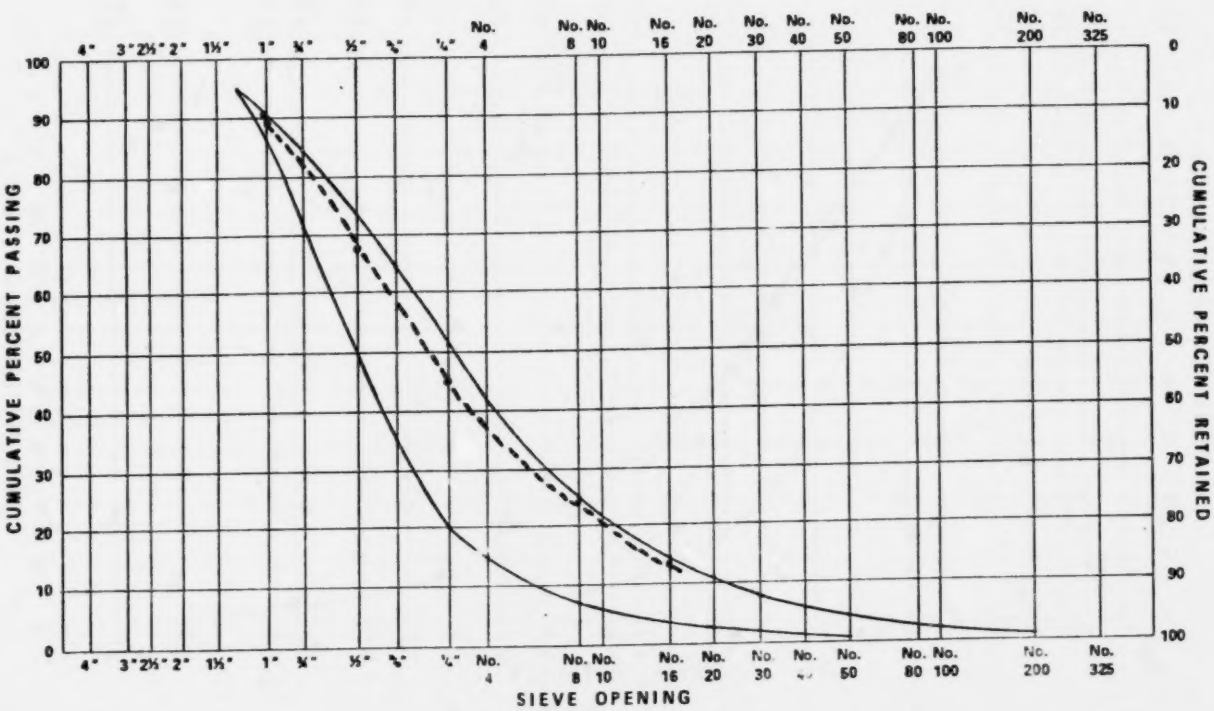
TEST SITE C

SAMPLE IDENTIFICATION WESTERN

DATE SAMPLE TAKEN 5-31-78

TEST PERFORMED BY S.U.

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	279.1	1247.3	968.2	10.5	9205.7	100.0	1
1"		2272.5	1993.4	21.7	8237.5	89.5	2
1/2"		2409.9	2130.8	23.1	62[illegible].1	67.8	4
1/4"		2182.8	1903.7	20.7	4113.3	44.7	8
#8		1226.3	947.2	10.3	2209.6	24.0	16
#16		1541.5	1262.4	13.7	1262.4	13.7	16



15000

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 36

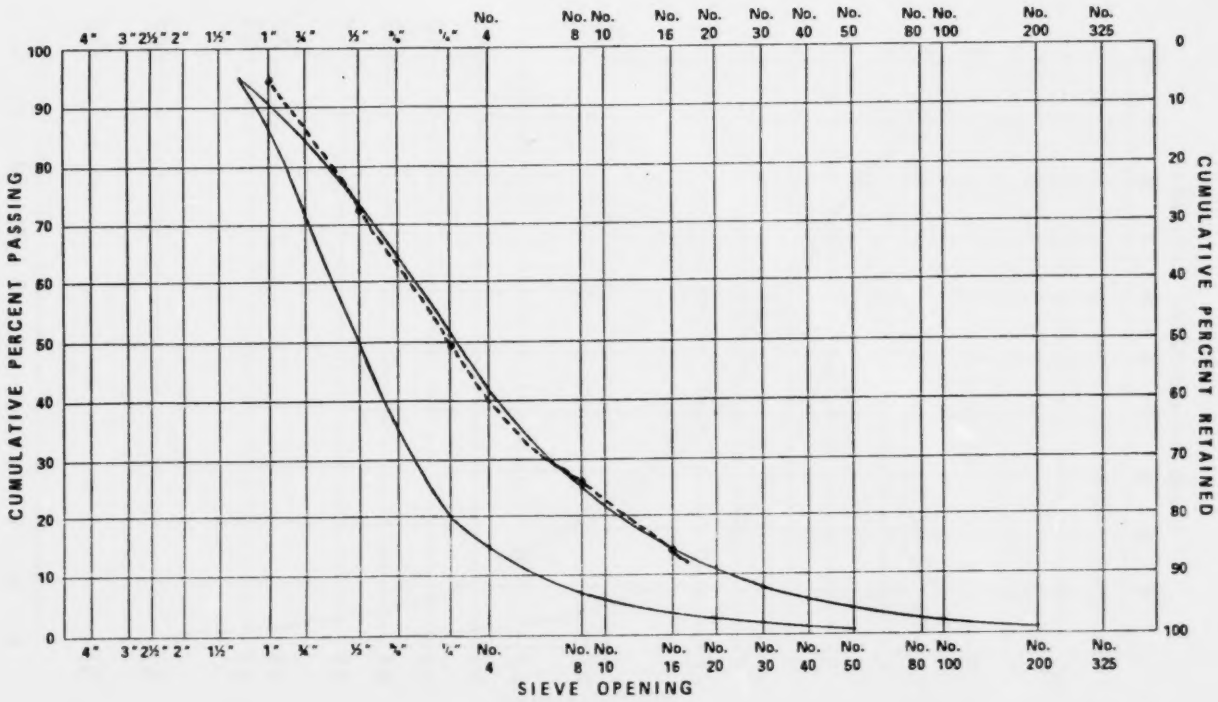
TEST SITE C

SAMPLE IDENTIFICATION WESTERN

DATE SAMPLE TAKEN 6-1-78

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	110.6	378.0 / 339.0	495.8	5.4	9200.3	100.0	1
1"		1237.0 / 1074.5	2090.3	22.7	8704.5	94.6	2
1/2"		1107.3 / 1222.7	2108.8	22.9	6614.2	71.9	4
1/4"		1087.1 / 1255.8	2121.7	23.1	4505.4	49.0	7
#8		610.2 / 719.7	1108.7	12.1	2383.7	25.9	11
#16		710.0 / 786.2	1275.0	13.9	1275.0	13.8	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 40

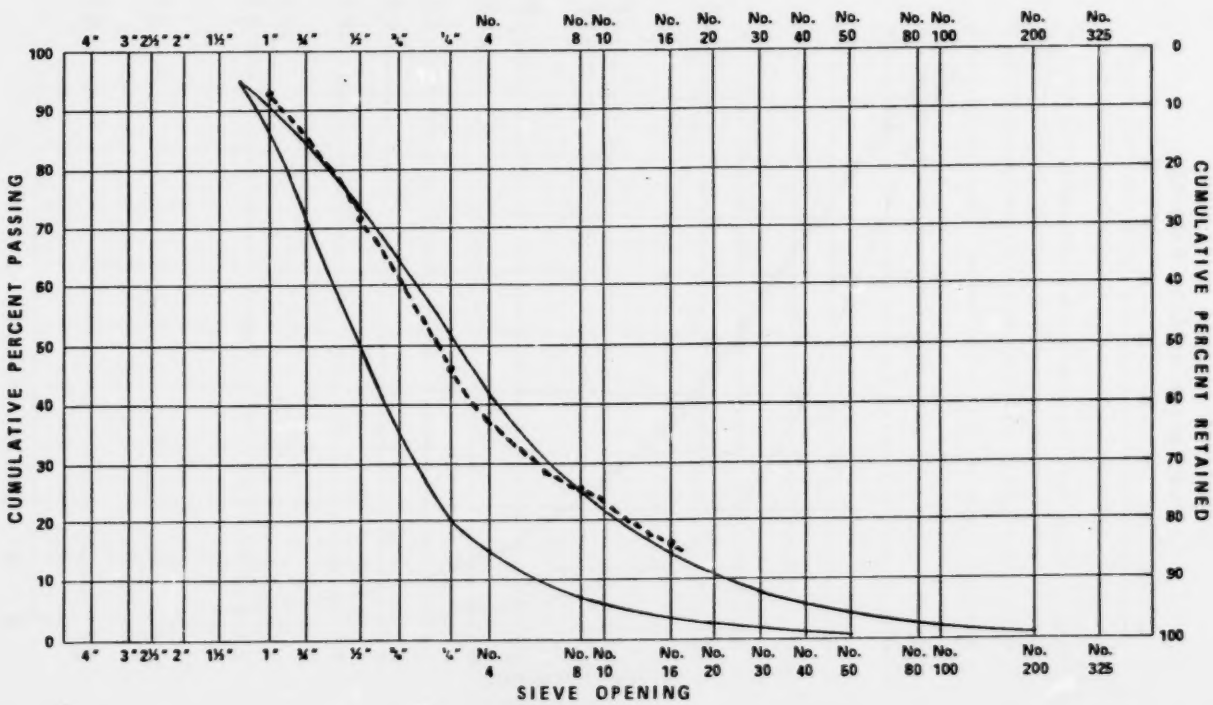
TEST SITE C

SAMPLE IDENTIFICATION WESTERN COAL

DATE SAMPLE TAKEN 6-2-78

TEST PERFORMED BY JDB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	109.5	450.5 / 365.6	597.1	7.0	8590.2	100.0	1
1"		941.2 / 1138.5	1860.7	21.7	7993.1	93.0	2
1/2"		1107.2 / 1264.7	2152.9	25.1	6132.4	71.4	4
1/4"		930.3 / 1080.4	1791.7	20.9	3979.5	46.4	7
#8		465.0 / 528.1	774.1	9.0	2187.8	25.5	11
#16		774.3 / 858.4	1413.7	16.5	1413.7	16.5	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 41

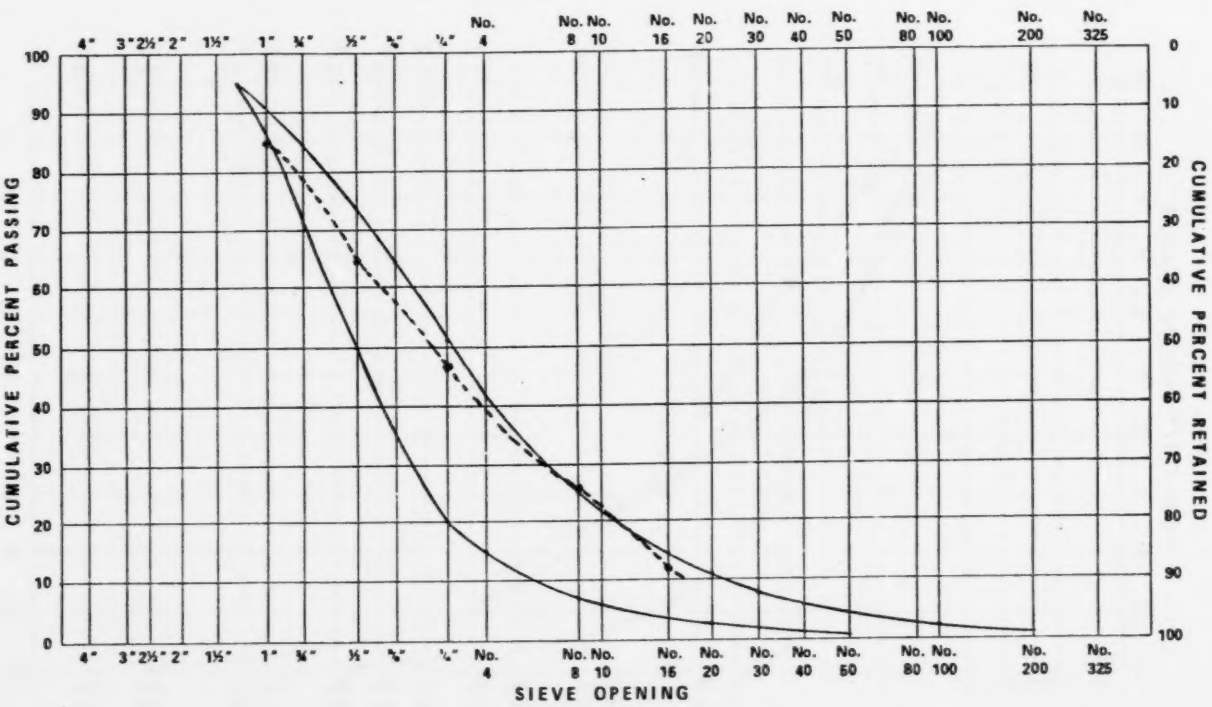
TEST SITE C

SAMPLE IDENTIFICATION Eastern High Fusion.

DATE SAMPLE TAKEN 6-7-78

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	109.6	662.9 / 745.6	1189.3	14.7	8078.6	100.0	1
1"		969.9 / 924.9	1675.6	20.7	6889.3	85.3	2
½"		824.7 / 797.2	1402.7	17.4	5213.7	64.6	4
¼"		965.1 / 997.6	1743.5	21.6	3811.0	47.2	7
#8		657.1 / 691.4	1129.3	14.0	2067.5	25.6	12
#16		569.4 / 588.0	938.2	11.6	938.2	11.6	12



15900

KVB

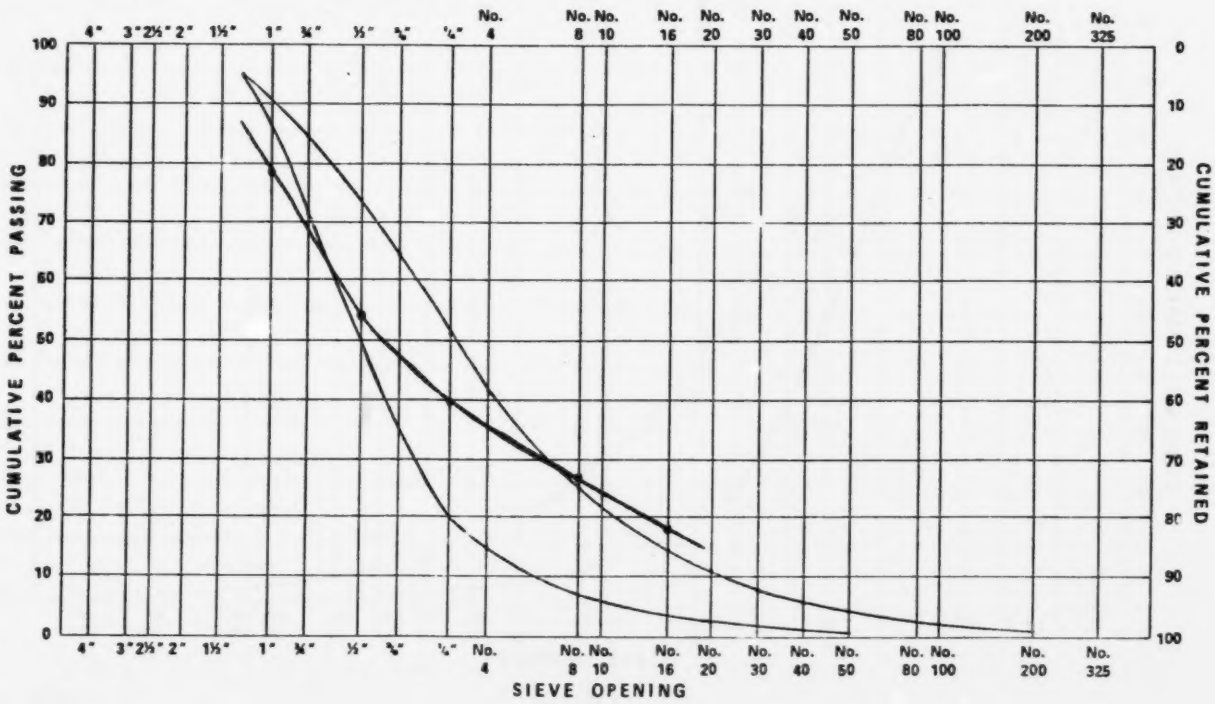
SIEVE ANALYSIS TEST REPORT

TEST NO. 42 DATE SAMPLE TAKEN 6-9-78

TEST SITE C TEST PERFORMED BY J.B

SAMPLE IDENTIFICATION Eastern Hyl Fusion

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	88.9 110.7	1105.5 1051.0	1956.9	21.8	8993.0	100.0	1
1"		1106.8 1255.8	2203.0	24.5	7036.1	78.2	2
½"		597.8 859.0	1257.2	14.0	4833.1	53.7	4
¼"		597.6 886.6	1188.6	13.2	3575.9	39.7	7
#8		378.4 587.3	766.1	8.5	2387.3	26.5	11
#16		761.2 1059.6	1621.2	18.0	1621.2	18.0	11



159 0

KVB

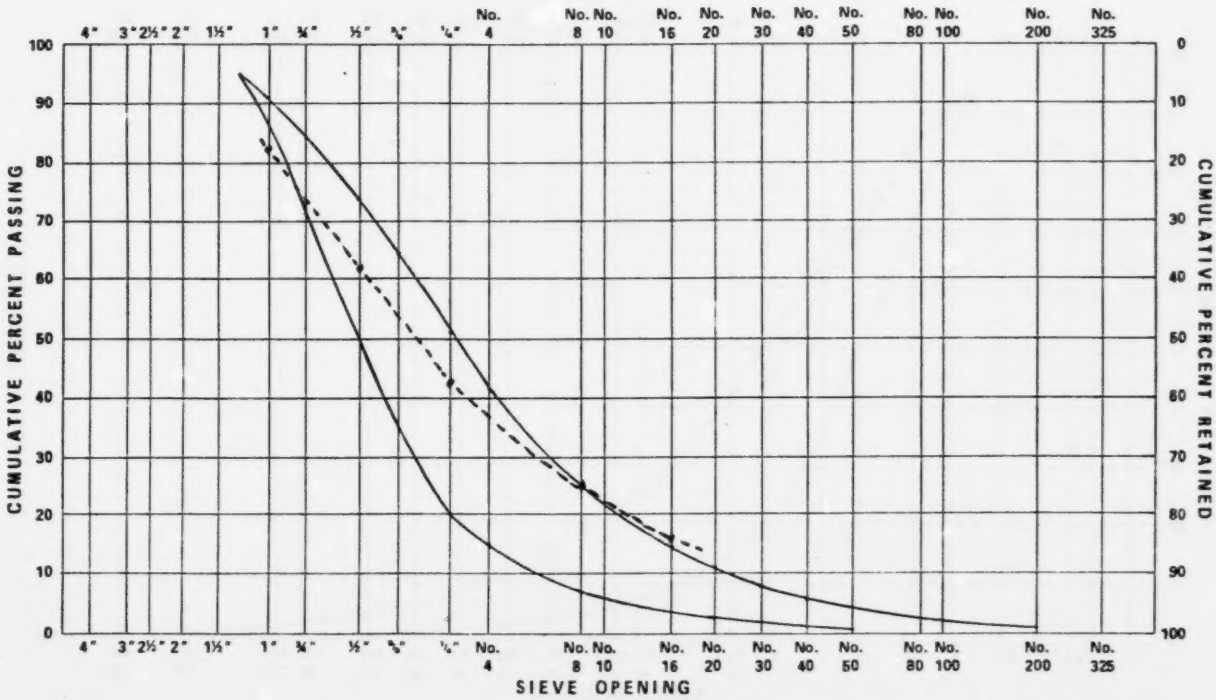
SIEVE ANALYSIS TEST REPORT

TEST NO. 43 DATE SAMPLE TAKEN 6-12-78

TEST SITE C TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Eastern High Fusim

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	110.7	1005.9 / 769.9	1554.4	16.4	9490.1	100.0	1
1"		1120.0 / 1172.4	2071.0	21.8	7935.7	83.6	2
1/2"		1066.2 / 939.9	1784.7	18.8	5864.7	61.8	4
1/4"		1602.6 / 871.5	1652.7	17.4	4080.0	43.0	7
#8		588.5 / 554.3	921.4	9.7	2427.3	25.6	11
#16		916.8 / 810.7	1505.9	15.9	1505.9	15.9	11



15900

KVB

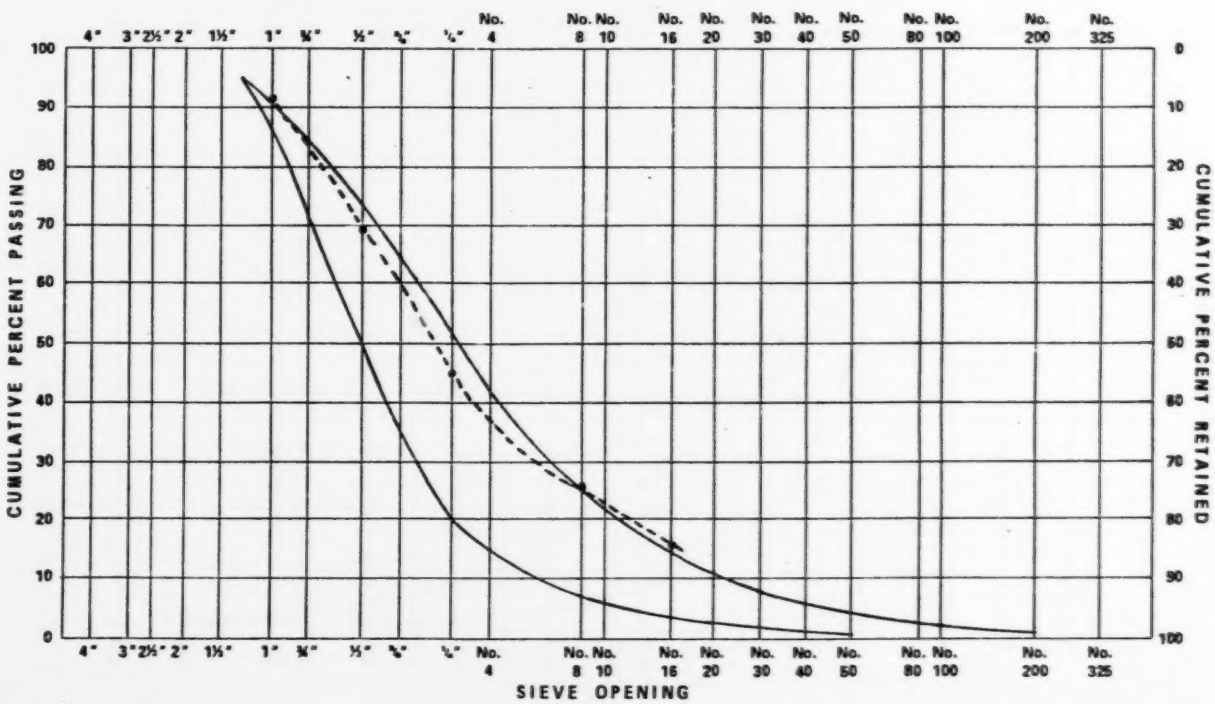
SIEVE ANALYSIS TEST REPORT

TEST NO. 44 DATE SAMPLE TAKEN 6-15-78

TEST SITE C TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Eastern High Fusion

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	110.5	738.0 / 362.5	879.5	8.6	10,222.8	100.0	1
1"		1444.6 / 982.4	2206.2	21.6	9343.3	91.4	2
1/2"		1375.6 / 1317.1	2471.7	24.2	7137.1	69.8	4
1/4"		1091.3 / 1169.0	2039.3	19.9	4665.4	45.6	7
#8		581.0 / 675.5	1035.5	10.1	2626.1	25.7	11
#16		828.4 / 983.2	1590.6	15.6	1590.6	15.6	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 45

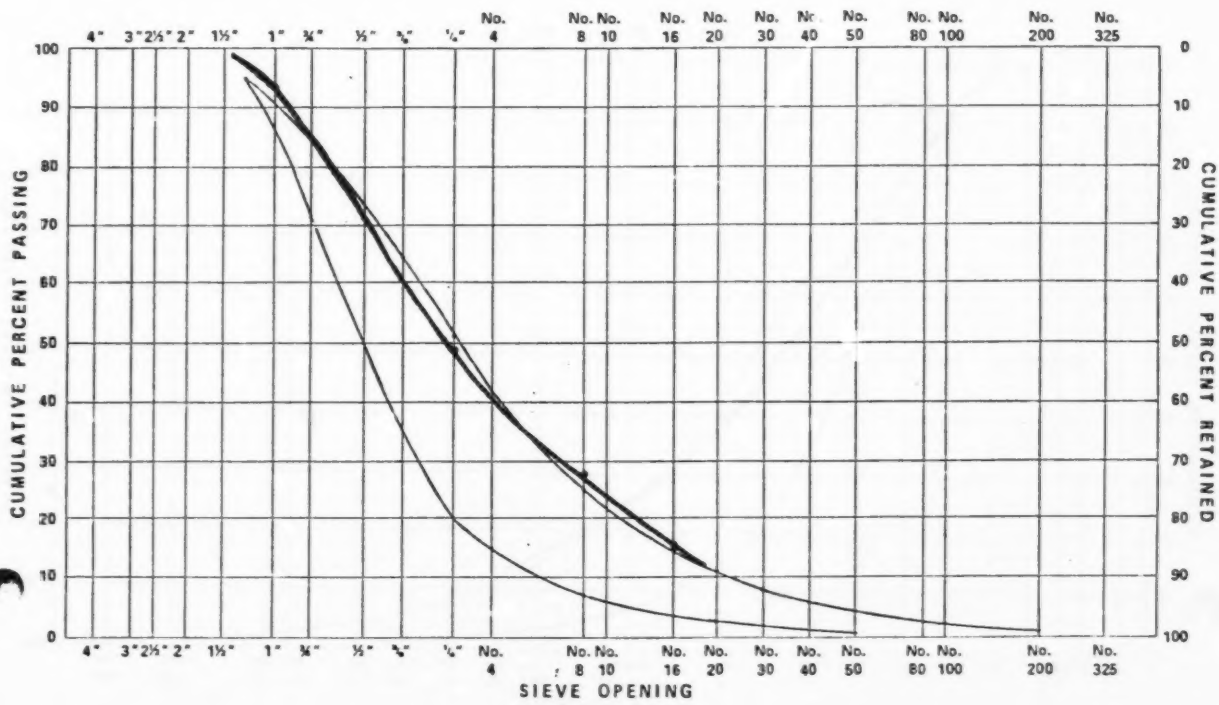
DATE SAMPLE TAKEN 6-17-78

TEST SITE C

TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION WESTERN COAL

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	109.3	581.2 418.7	781.3	6.8	11,429.6	100.0	1
1"		1431.1 353.3 1030.9	2487.4	21.8	10,648.3	93.2	2
½"		1262.2 488.4 1166.2	2588.9	22.7	8,160.9	71.4	4
¼"		1544.5 1179.4	2505.3	21.9	5572.0	48.7	7
#8		883.2 705.8	1370.4	12.0	3066.7	26.8	11
#16		1057.1 863.8	1696.3	14.8	1696.3	14.8	11



15900

KVB

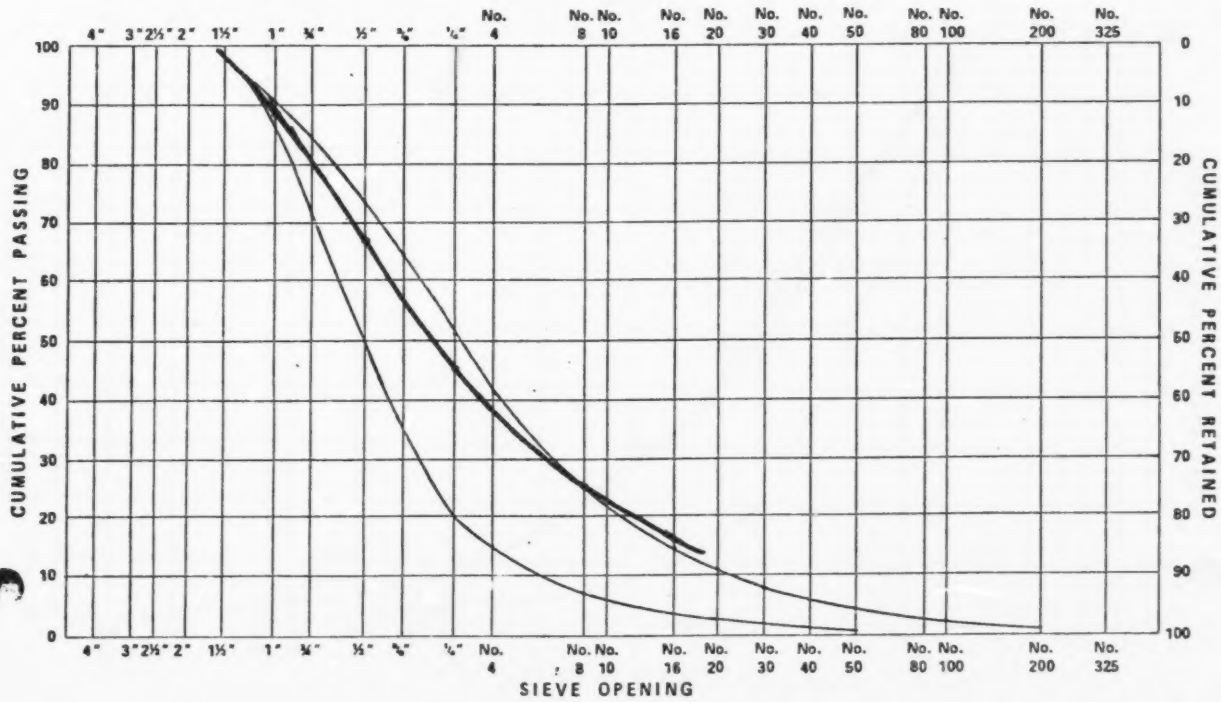
SIEVE ANALYSIS TEST REPORT

TEST NO. 46 DATE SAMPLE TAKEN 6-20-78

TEST SITE C TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION EASTERN LOW FUSION

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	109.4	923.2 307.5	1006.9	12.0	8398.1	100.0	1
1"		1180.6 862.8	1824.6	21.7	7391.2	88.0	2
½"		891.1 1149.1	1821.4	21.7	5566.6	66.3	4
¼"		661.1 1171.1	1613.4	19.2	3745.2	44.6	7
#8		340.4 711.9	833.5	9.9	2131.8	25.4	11
#16		439.7 1077.4	1298.3	15.5	1298.3	15.5	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 47 - Feeder #1

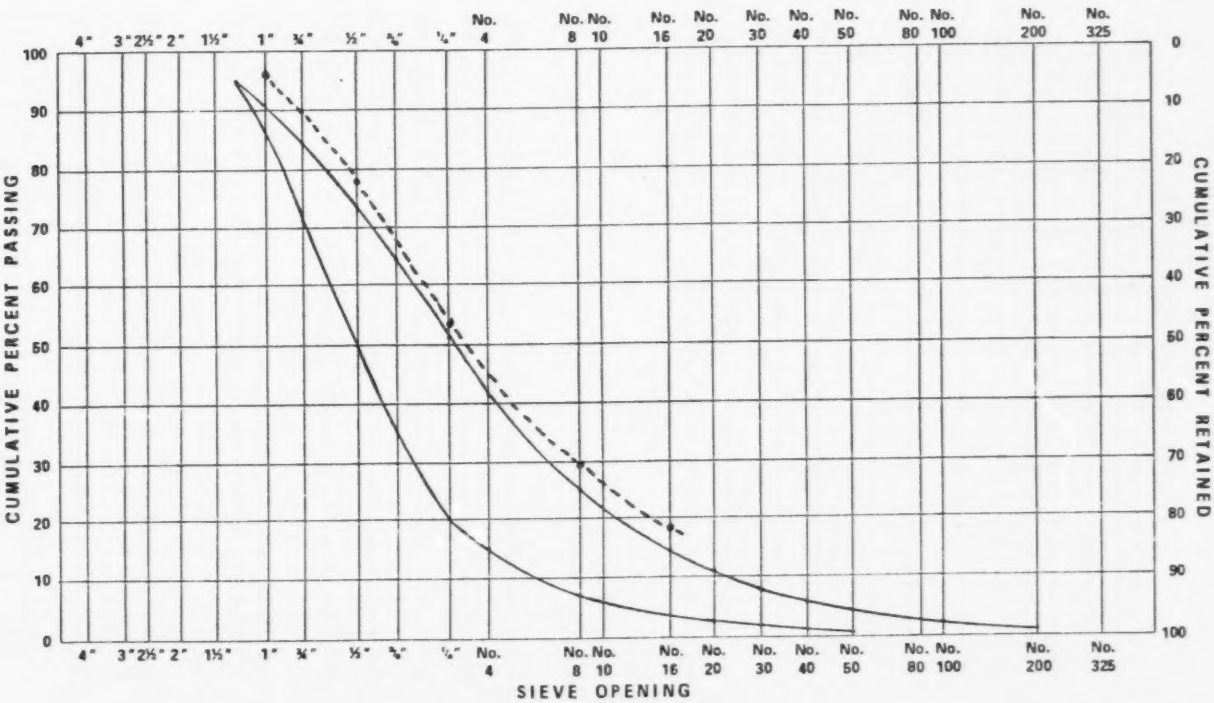
TEST SITE C

SAMPLE IDENTIFICATION Low Fusion

DATE SAMPLE TAKEN 6-29-78

TEST PERFORMED BY JD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	280.2	698.4	418.2	3.7	11,299.2	100.0	1
1"		2328.5	2048.3	18.1	10,881.0	96.3	2
1/2"		1106.6 / 2272.8	2819.0	24.9	8832.7	78.2	4
1/4"		2346.1 / 924.2	2709.9	24.0	6013.7	53.3	8
#8		1608.7	1328.5	11.8	3303.8	29.3	16
#16		588.5 / 1947.2	1975.3	17.5	1975.3	17.5	16



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 47 - Feeder #2

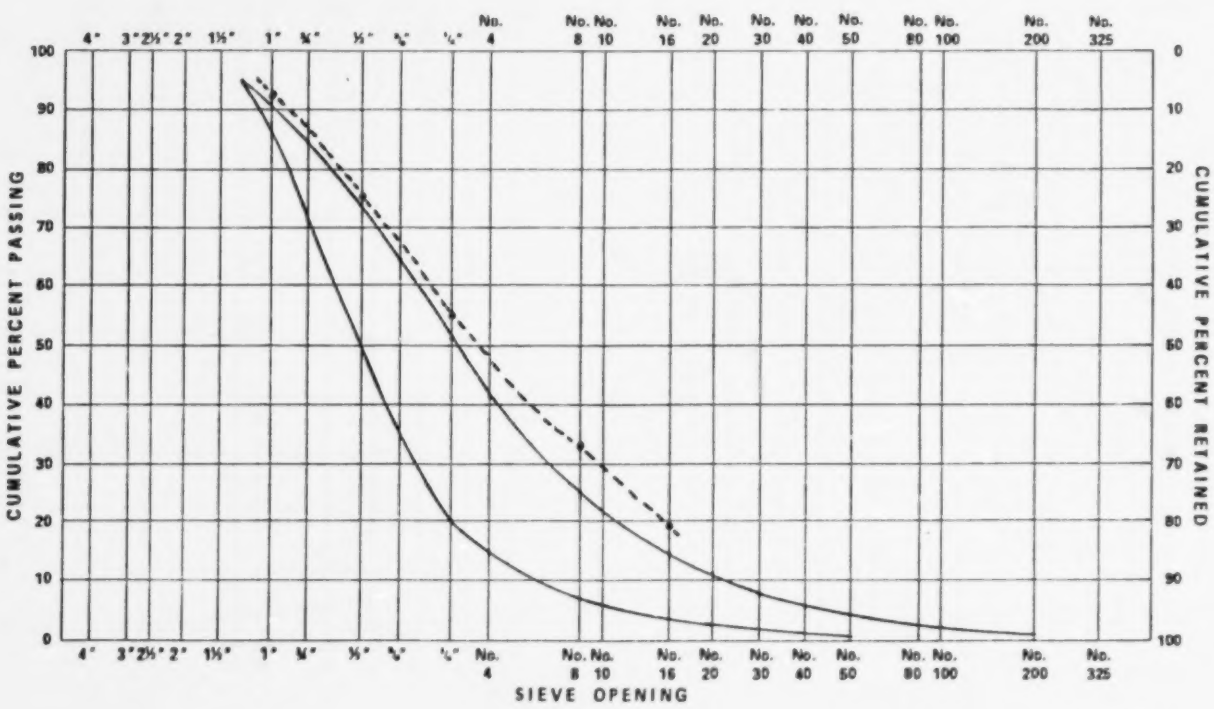
DATE SAMPLE TAKEN 6-29-78

TEST SITE C

TEST PERFORMED BY JD

SAMPLE IDENTIFICATION Low Fusion

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	280.2	731.9	451.7	7.5	6010.0	100.0	1
1"		1291.4	1011.2	16.8	5558.3	92.5	2
1/2"		1517.8	1237.6	20.6	4547.1	75.7	4
1/4"		1591.9	1311.7	21.8	3309.6	55.1	7
#8		1104.7	824.5	13.7	1997.8	33.3	11
#16		1453.5	1173.3	19.5	1173.3	19.6	11



15900

KVB

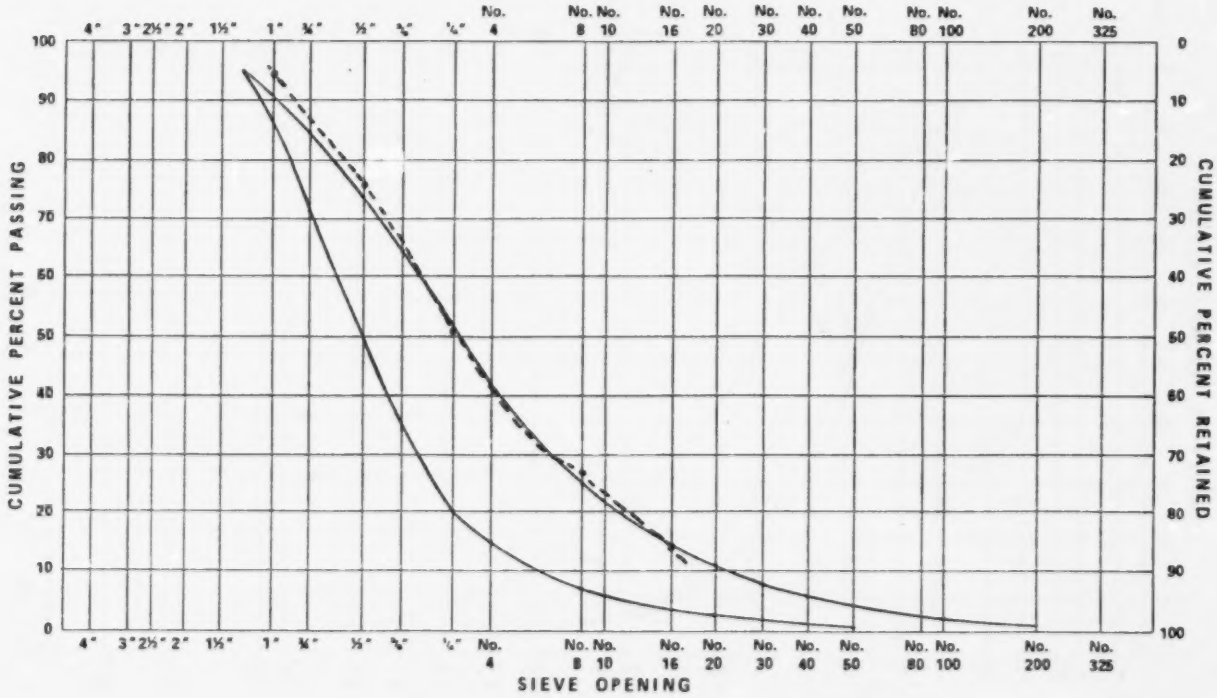
SIEVE ANALYSIS TEST REPORT

TEST NO. 47 Feeder #3 DATE SAMPLE TAKEN 6-29-78

TEST SITE C TEST PERFORMED BY MJ

SAMPLE IDENTIFICATION Low Fusion.

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	280.2	740.5	460.3	5.9	7746.8	100.0	1
1"		1667.0	1386.8	17.9	7286.5	94.1	2
1/2"		2252.1	1971.9	25.5	5899.7	76.2	4
1/4"		2112.2	1832.0	23.6	3927.8	50.7	7
#8		1300.4	1020.2	13.2	2095.8	27.1	11
#16		1355.8	1075.6	13.9	1075.6	13.9	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 47 Feeder #4

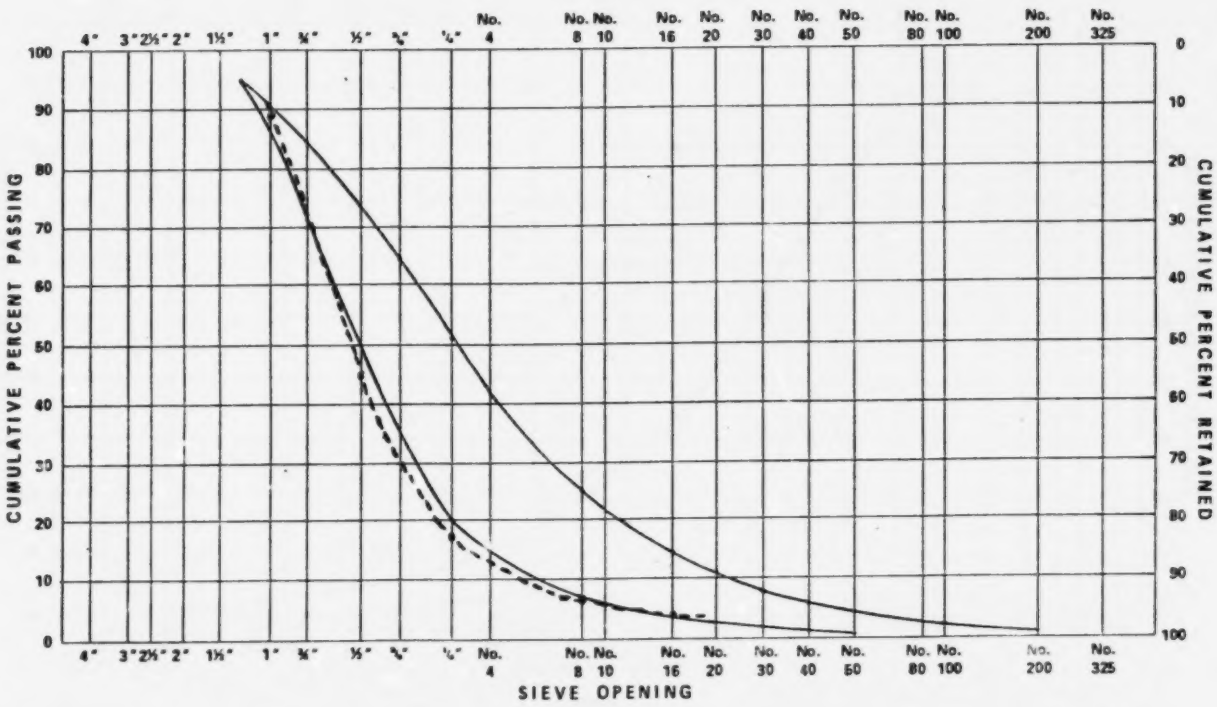
TEST SITE C

SAMPLE IDENTIFICATION LOW FUSION

DATE SAMPLE TAKEN 6-29-78

TEST PERFORMED BY MJ

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	280.2	1132.6	852.4	10.5	8104.7	100.0	1
1"		2481.1 / 1685.9	3606.6	44.5	7252.3	89.5	2
1/2"		2507.8	2227.6	27.5	3645.7	45.0	4
1/4"		1155.3	875.1	10.8	1418.1	17.5	7
#8		481.2	201.0	2.5	543.0	6.7	11
#16		622.2	342.0	4.2	342.0	4.2	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 47 Feeder #5

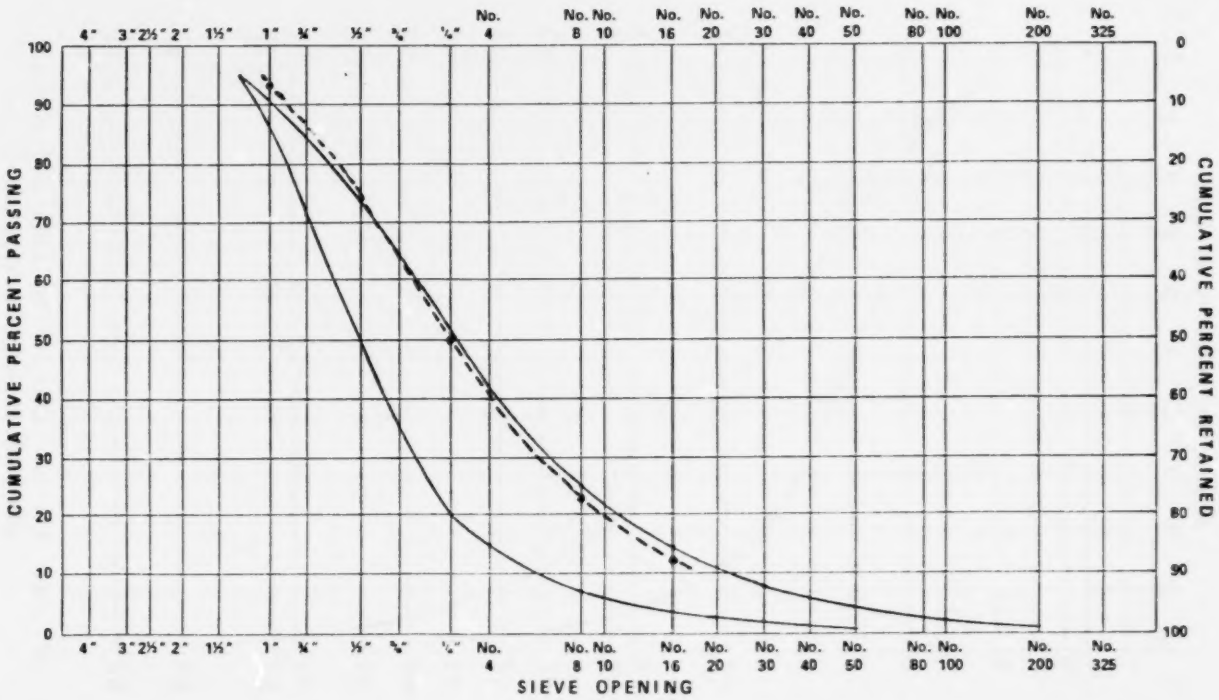
DATE SAMPLE TAKEN 6-29-78

TEST SITE C

TEST PERFORMED BY JD

SAMPLE IDENTIFICATION Low Fusion

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	280.0	896.3	616.3	6.9	8932.6	100.0	1
1"		1976.1	1696.1	19.0	8316.3	93.1	2
1/2"		2430.8	2150.8	24.1	6620.2	74.1	4
1/4"		1993.1 / 1019.5	2452.6	27.5	4469.4	50.0	8
#8		1230.0	970.0	10.9	2016.8	22.5	16
#16		1326.0	1046.8	11.7	1046.8	11.6	16



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 47 Feeder #6

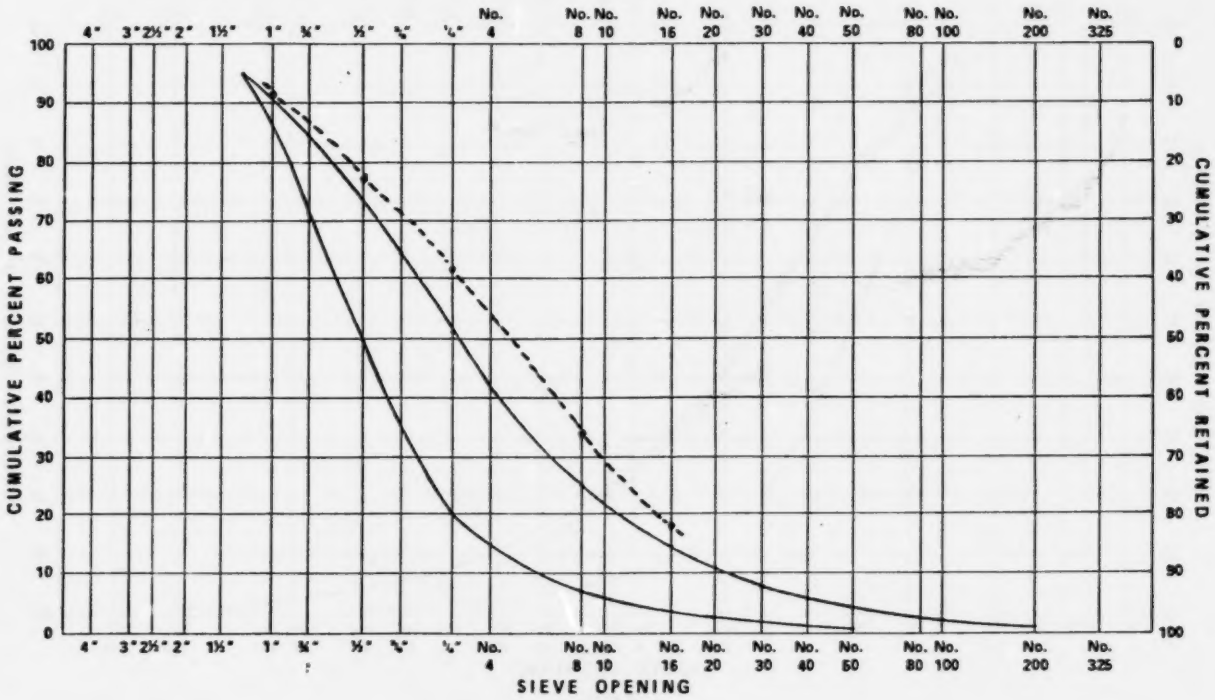
DATE SAMPLE TAKEN 6-29-78

TEST SITE C

TEST PERFORMED BY JD

SAMPLE IDENTIFICATION Low Fusion

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	280.0	1083.5	803.5	9.2	8727.8	100.0	1
1"		1447.8	1167.8	13.4	7924.3	90.8	2
1/2"		1680.4	1400.4	16.0	6756.5	77.4	4
1/4"		2105.2 / 856.7	2401.9	27.5	5356.1	61.4	8
#8		1655.9	1375.9	15.8	2954.2	33.9	16
#16		1858.3	1578.3	18.1	1578.3	18.1	16



15900

KVB

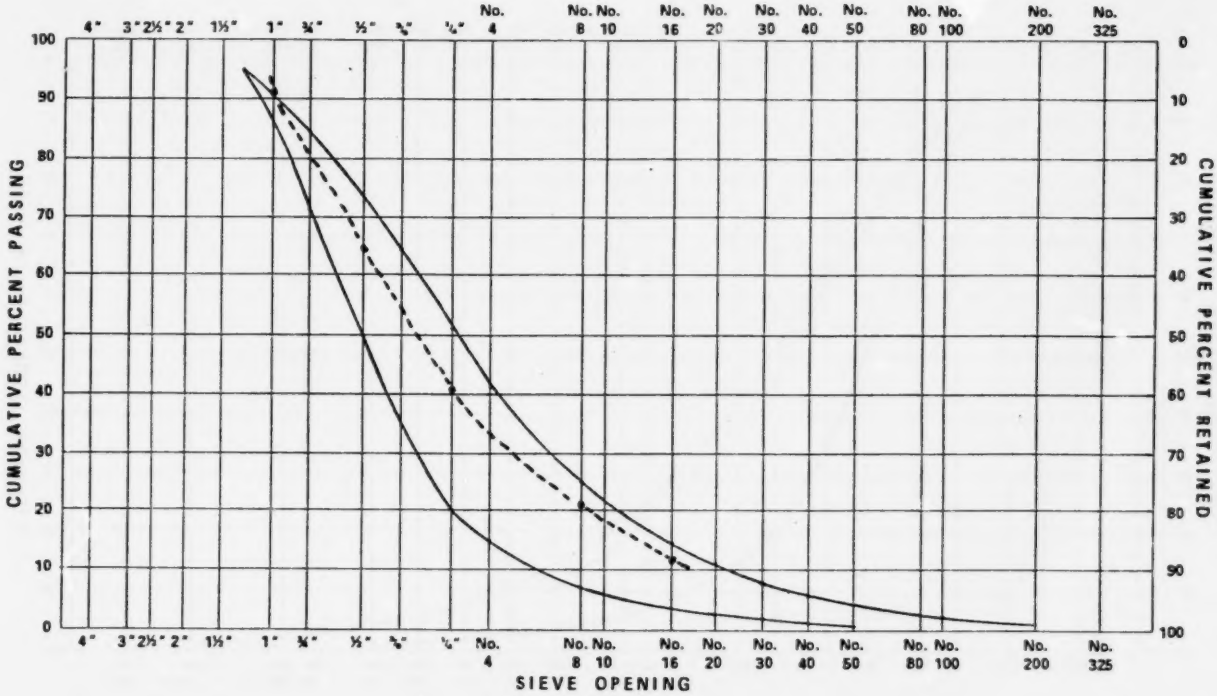
SIEVE ANALYSIS TEST REPORT

TEST NO. 47 Feeder #7 DATE SAMPLE TAKEN 6-29-78

TEST SITE C TEST PERFORMED BY JD

SAMPLE IDENTIFICATION Low Fusion

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	280.2	814.7	534.5	8.6	6214.6	100.0	1
1"		1925.4	1645.2	26.5	5680.0	91.4	2
1/2"		1816.6	1536.4	24.7	4034.8	64.9	4
1/4"		1478.9	1198.7	19.3	2498.4	40.2	7
#8		876.9	596.7	9.6	1299.7	20.9	11
#16		983.2	703.0	11.3	703.0	11.3	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. Composite

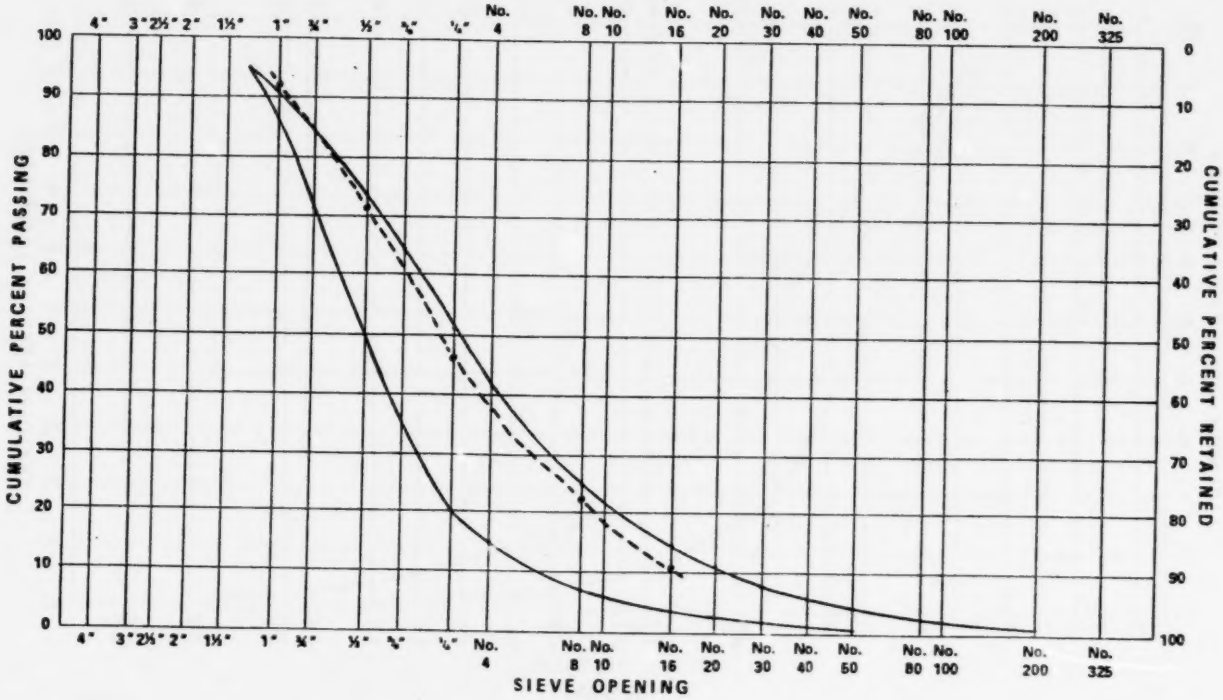
DATE SAMPLE TAKEN —

TEST SITE C

TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION EASTERN LOW FUSION

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	109.8	711.9	602.1	7.7	7778.4	100.0	1
1"		699.0 / 1165.1	1644.5	21.1	7176.3	92.3	2
1/2"		1315.6 / 790.8	1886.8	24.3	5531.8	71.2	4
1/4"		1136.9 / 1055.1	1972.4	25.4	3645.0	46.9	7
#8		997.2 / —	887.4	11.4	1672.6	21.5	11
#16		895.0	785.	10.1	785.2	10.1	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. WESTERN COAL

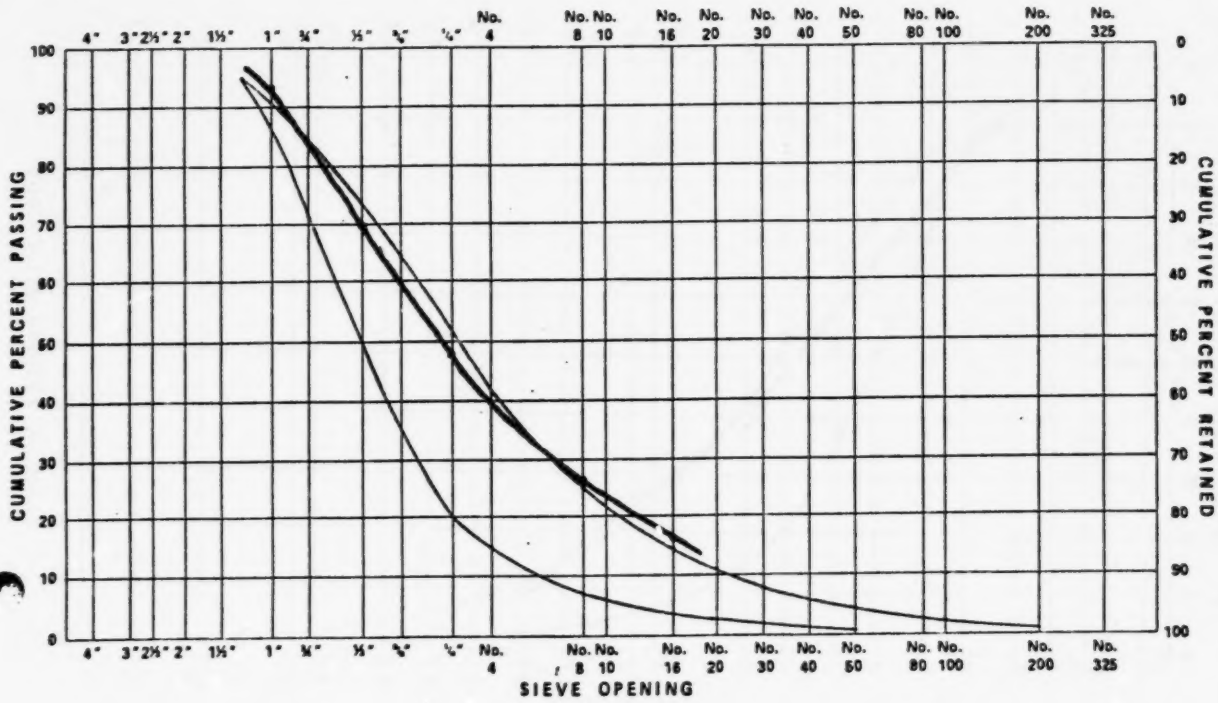
DATE SAMPLE TAKEN —

TEST SITE C

TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION WESTERN Composite

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	109.3	526.8 386.8	695.0	7.0	9991.1	100.0	1
1"		1288.9 1240.5	2310.8	23.1	9296.1	93.0	2
1/2"		1180.0 1320.0	2291.4	22.8	6985.3	69.9	4
1/4"		1062.5 1262.3	2106.2	21.1	4703.9	47.1	7
#8		523.3 718.3	1023.0	10.2	2597.7	26.0	11
#16		711.6 1081.7	1574.7	15.8	1574.7	15.8	11



15900

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. Eastern High Fusion Composite

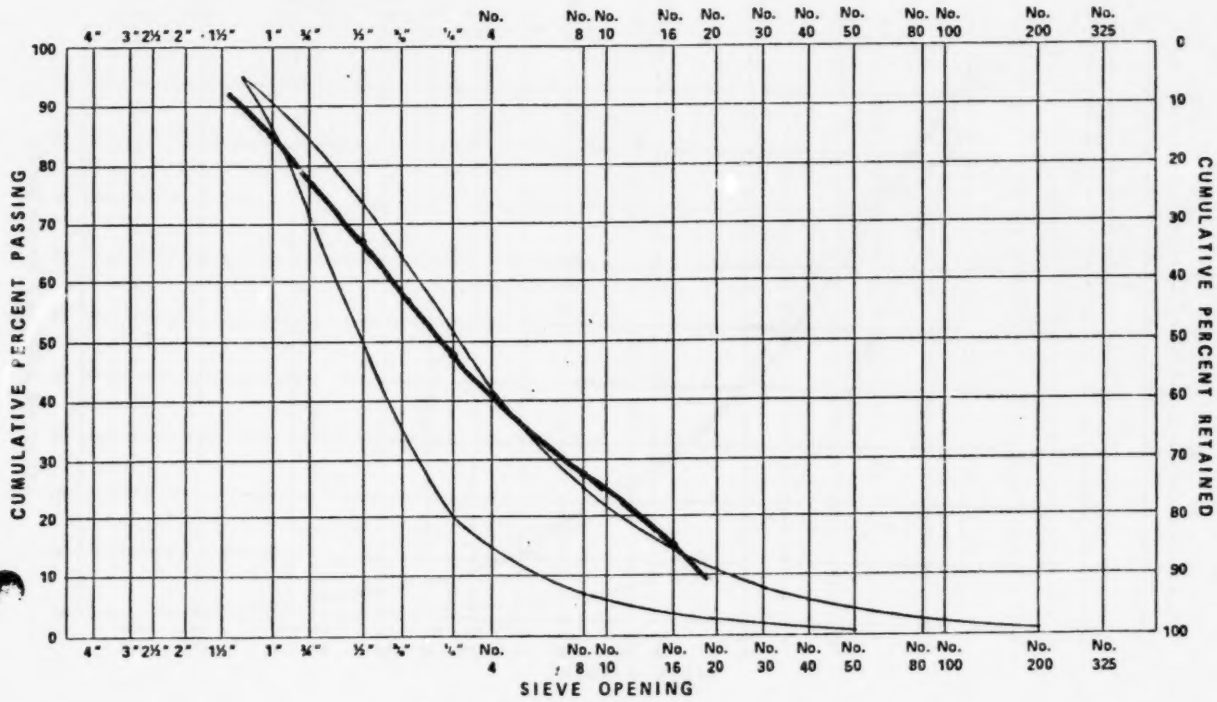
TEST SITE C

SAMPLE IDENTIFICATION E. H.F.

DATE SAMPLE TAKEN —

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	110.5	928.8 627.7	1335.5	14.3	9341.7	100.0	1
1"		997.1 1030.3	1806.4	19.3	8006.2	85.7	2
½"		934.2 1069.0	1782.2	19.1	6199.8	66.4	4
¼"		831.1 1354.5	1964.6	21.0	4417.6	47.3	7
#8		424.1 909.0	1112.1	11.9	2453.0	26.3	11
#16		463.8 1090.1	1340.9	14.4	1340.9	14.4	11



15900